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# Office of Bilingual Education and Minority Language Affairs

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### A Study Addressing Three Components of the National Bilingual Research Agenda for English Language Learners on High Stakes Assessment

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**A<sup>+</sup>** **ALDINE INDEPENDENT SCHOOL DISTRICT**  
*STATE RECOGNIZED SCHOOL DISTRICT* 1996-2000

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**FIELD-INITIATED RESEARCH REPORT**  
**August, 2001**

**SECTION I**  
**INTRODUCTION**

The Title VII OBEMLA-sponsored field-initiated research conducted by the Aldine Independent School District (Houston, Texas), Texas A&M University (College Station, Texas), and Sam Houston State University (Huntsville, Texas) offers the most comprehensive observational case available of an urban public school system's elementary transitional Spanish to English bilingual education program. Initiated in 1999 and completed in 2000, with data analyzed in 2001, the research consisted of actual observed classrooms from Pre-kindergarten through grade four, standardized testing, and state assessment data. Given the large number of observations among transitional bilingual classrooms, the data can address a variety of important educational research and policy questions.

The aim of this report is to increase the knowledge base related to transitional bilingual education programs. To achieve this aim, our purposes were:

1. To provide a model for assessing pedagogical accommodations in bilingual education classrooms
2. To offer a correlation between opportunity-to-learn in the native language (L1) and/or the target language (L2) and performance on a high stakes test
3. To assess the time benchmarks of the language of instruction in a continuum of developing English proficiency from Pre-Kindergarten through grade four.

## BACKGROUND

Students who attend public schools in the United States are not all the same—culturally, economically, linguistically, or intellectually. As educators become increasingly aware of this diversity within the classrooms, they are challenged to find ways to meet the cultural, economic, linguistic and academic needs of each and every student who enters the schoolhouse door.

Considering the nation’s largest minority group of students to be educated in the public schools in the coming years, Riley (2000), former Secretary of Education, challenged educators to provide a quality education for Hispanics. He added, “Bilingual...programs are working well in many states toward this goal of bi-literacy, and they will continue to work well if we set clear performance measures and provide the resources needed to meet the rising demand...” (p. 2).

Bilingual education, although often overlooked, has been embedded in public education throughout the history of the United States (Castellanos, 1983), and public education has been the prime socializing agent for “assimilating into the mainstream the many groups that have migrated to this country or who have become part of it as a result of territorial expansion” (Sancho, 1980, p. 1).

Students who cannot speak English have two educational goals. They want to learn, and they want to master English (Ramírez, 1992). Determining how students can best reach their goals has become a subject of national debate.

Both proponents and opponents of bilingual education have concerns. A growing body of research points to the potential benefits of bilingual education, a strategy for overcoming the challenges English language learners face in the

classroom. Yet numerous community-held beliefs contradict research findings (Crawford, 1998).

With the ultimate goal of producing students who are bilingual and biliterate, educators continually seek to better understand the interaction between the student's home language and second language, English (DeLucca, 1998). Due to the limitations of existing studies of effective bilingual education and the complexity of the phenomenon being studied, the researchers recognized a need for further research to address these issues. For the purpose of this study, research was focused on transitional bilingual education.

### **Statement of the Problem**

This study addressed two specific problems: (a) the lack of research in effectiveness of transitional bilingual programs, and (b) the lack of a comprehensive evaluation of transitional bilingual programs for entire school districts. Nationally and locally, there has been variability in implementation and instructional practices for transitional bilingual programs, and there has been a paucity of research studying the effectiveness of bilingual programs (Breunig, 1998; Heras, 1994; Strong, 1986).

According to the literature, few researchers have directly observed instructional events in bilingual classrooms (Brisk, 1991; Breunig, 1998; Escamilla, 1992; Greene, 1998; Heras, 1994; Krashen & Biber, 1988; Strong 1986). As Strong (1986) observed teachers in 20 elementary school bilingual classrooms, it was determined that the teachers used as much English as the teachers in all English classrooms used. Escamilla (1992) also found teachers in certain bilingual programs lacking in their use of Spanish.

As a result of the lack of empirical data, Lara-Alecio and Parker (1994) developed a four-dimensional model, the Transitional Bilingual Pedagogical (TBP) Model, for transitional bilingual classrooms. Breunig (1998) conducted an observational study based on the four dimensions of the TBP Model, seeking to determine whether the TBO Protocol yielded reliable information concerning the four dimensions in bilingual classrooms. Breunig (1998) found that the TBO Protocol was able to isolate and describe theoretically important practices and to relate the practices to fidelity and variability of program implementation, findings which had been lacking in prior research. Breunig (1998) suggested that “the instrument would appear to be extremely useful as a tool to provide teachers with feedback, aid in lesson planning decisions to meet program goals and objectives, and program evaluation” (p. 119).

Using the TBO Protocol instrument, the researchers built on the work of Lara-Alecio and Parker (1994) and Breunig (1998) and conducted a study examining pedagogy and assessment within 102 Pre-Kindergarten through fourth grade transitional bilingual classrooms in an urban school district.

The research design was both descriptive as correlational, and inferential. The research project, conducted during the 1999-2000 school year, had the following goals that directly addressed the research questions:

1. To assess the pedagogical occurrences, language of instruction (teacher and student), language content, language mode, and classroom activity structure, within 102 Pre-Kindergarten through fourth grade bilingual classrooms on 17 early childhood/elementary campuses, or 51% of the district’s 32 early

childhood/elementary campuses, as measured by the Transitional Bilingual Observation Protocol (TBOP) in an urban school district in Texas.

2. To investigate the students' functional classroom language in the reading/language arts, math, and content reading subjects of science and social studies as well as pedagogical occurrences (activity structures, language of instruction, and language content) measured by the TBOP and a high stakes assessment, the Texas Assessment of Academic Skills (TAAS).
3. To establish a system to determine benchmarks along a continuum of second language proficiency in English language learners (ELLs) as proficiency relates to the yielding of meaningful results on high stakes assessment.

### **Significance of the Study**

The administrators of the urban school district where this project transpired are constantly seeking effective ways to improve the academic achievement of their students. This study provided data upon which to base decisions about the program.

Additionally, this study is significant in that it addressed three issues on the National Research Agenda:

1. What is the relationship between opportunity-to-learn in the native language (L1) and the target language (L2) and performance in high stakes testing in L1 (defined as Spanish in this study) and L2 (defined as English in this study)?
2. How do various native language accommodations (pedagogical factors) affect performance on high-stakes testing for students at different levels of language proficiency (e. g., oral native language instruction, amount of native language

instruction, amount of content taught at the dense cognitive level, and activity structures in the classrooms)?

3. At what point does testing a child in the second language yield meaningful results on a high stakes assessment?

The ever-growing Hispanic student population, which has increased at five times the rate of the non-Hispanic population, is a phenomenon that has dramatically affected public school systems, especially those in urban areas (Howe, 1994). It is projected that within the next five years Hispanics, the nation's fastest-growing minority group, will be the largest and likely the least educated minority group (Sack, 2000).

About one-third of the immigration to the United States during the ten-year period from 1980 to 1990 was from Latin America (Nieto, 1993). This trend is reflected in the steady growth in ELL students, 15% per year in the district as verified by the district's Public Education Information System (PEIMS) data. Soaring demographics drive changes in schools (Ovando & Collier, 1998). It is imperative that proposed changes in bilingual education be based on observed data and not non-grounded or unreliable data.

This study not only provided data related to the National Agenda items listed above, but it also provided data regarding the association between pedagogy and scores of third grade students in bilingual classrooms on a high-stakes test, the Texas Assessment of Academic Skills (TAAS). This test, characterized as a high-stakes assessment, is used to determine placement (Harville, Cavazos, & Roede, 1999). At the end of each year, ELL students are expected to have achieved one year of academic growth, and TAAS is one of the components examined in determining whether a student is passed or retained (K. M. Roede, personal communication, May 25, 2000).



This study also provided district and national administrators opportunities to learn pedagogically and to offer them a model of assessing what is actually occurring within early childhood and elementary bilingual classrooms. Addressing local, state, and national concerns, this research provided opportunities to assess the district's program in the following ways:

1. Student language differences
2. Level of English transition established from first semester to second semester
3. Types of activity structures teachers used within the classroom
4. Social and academic routines
5. Amount of academic content facilitated by teachers
6. Predominance of communication mode (reading, writing, speaking, listening)
7. Teacher perceptions of language occurrences in their classrooms and actual classroom occurrences
8. The functional and academic language, as well as pedagogical occurrences within the classroom as observed by the TBOP to high stakes tests
9. Determination of the best procedures among the observed dimensions of the Transitional Bilingual Protocol (TBP) Model to bilingual students' achievement as measured by a high stakes test (Lara-Alecio & Irby, 1999).

### **Research Questions**

Following are the six research questions which guided this study of the selected Pre-Kindergarten through fourth grade Spanish/English transitional bilingual classrooms in Aldine Independent School District, Houston, Texas:

1. Which language of instruction do teachers predominately use?
2. To what extent is the language of instruction used by teachers associated with language content?
3. To what extent is the language of instruction associated with language mode?
4. To what extent does each level of language content occur with each activity structure?
5. Is there an association between classroom observations and teachers' perceptions of their language of instruction?
6. What are the associations between the four dimensions of TBP theory and bilingual student achievement on the high-stakes assessment, TAAS?

### **Definition of Terms**

The operational definitions used in this study are defined as follows:

1. Academic Language: the language of schooling (Guerrero, 1997).
2. Assimilation: the process in which an individual or group completely takes on the traits of another culture, leaving behind the original cultural identity (Ovando & Collier, 1998, p. 145).
3. Basic Interpersonal Communication Skills (BICS): skills necessary for socialization and communicating needs and desires (cited in Thomas, 1992).
4. Bilingual Education Programs: programs in which the students' first language and English are used in some combination for instruction, and where the first language serves as a temporary bridge to instruction in English (Baca & Cervantes, 1989; Birman & Ginsburg, 1983; Bruce, Lara-Alecio, Parker, Hasbrouck, Weaver, & Irby, 1994; Peregoy & Boyle, 1993; Trueba, 1979).

5. Cognitive-Academic Language Proficiency (CALP): skills “...associated with literacy and cognitive development that are acquired through formal instruction (Baca & Cervantes, 1989, p. 82).
6. Dual-Immersion Program: teaching strategy “in which English-speaking and non-English-speaking students learn together in the same class” (Sack, 2000, p. 34).
7. English language learners: students who are beginning to learn English or who have demonstrated proficiency in English (Padron & Waxman, 1999).
8. Functional Language : the observed language of the student in the classroom (Irby, 2000).
9. High-Stakes Testing: those used as a basis for entrance to kindergarten, for promotion to the next grade, for graduation, to determine teachers’ and schools’ effectiveness, and more (Clarke et al., 2000).
10. L1: native language (Bruce, et al., 1997). In this study, L1 is Spanish.
11. L2: second language (Bruce, et al., 1997). In this study, L2 is English.
12. Language-minority students: students who come to the “schooling process without the language skills through which that process is communicated” (Garcia, 1999, p. 38).
13. Language proficiency: “those linguistic elements necessary for successful communication within the school environment” (Avila, 1997, p. 1).
14. Limited English Proficient (LEP): “lack of facility, fluency, or linguistic competence in English as a second language relative to a normal native speaker-listener of the language (Kretschmer, 1991, p. 5).

15. Teacher Questionnaire on Language Usage (TQLA): a questionnaire administered to ascertain teachers' perception of the language of instruction used in the bilingual classroom
16. Transitional Bilingual Education: subject matter taught in the student's primary language only to the extent necessary for the child to acquire English and function in the regular classroom (Baca & Cervantes, 1989, p. 26; Birman & Ginsburg, 1983, p. xi; Trueba, 1979, p. 57).
17. Transitional Bilingual Observation (TBO) Protocol: an observation instrument designed to provide reliable information about transitional bilingual classrooms (Lara-Alecio & Parker, 1994).
18. Transitional Bilingual Pedagogical (TBP) Model: a pedagogical model that focuses on four different dimensions of transitional bilingual classroom instruction: Language Content, Language of Instruction, Communication Mode, and Activity Structure (Lara-Alecio & Parker, 1994).

### **Limitations/Delimitations**

The principal purpose of this study was to provide information to district and national administrators regarding the connections between pedagogy in transitional bilingual classrooms and high-stakes assessment. This study was limited to observing bilingual teachers in one urban district. Therefore, this study may not be generalizable beyond settings with similar characteristics to the setting in which the study was conducted.

The sample consisted of over 18,000 observations of 102 teachers who were assigned to teach in bilingual classrooms. The study did not include gathering of data on

prior training of teachers, their years of teaching experience, or their years of teaching at grade levels observed in the study. Furthermore, no data were included on the amount and quality of staff development provided for teachers, evaluation of teachers' effectiveness, or whether there were gender differences in teaching pedagogy.

### **Organization of the Study**

This report is divided into three sections. Section I provides background information on transitional bilingual education and the rationale for the study. Also included in Section I are seven research questions, which guided the study, definition of terms, significance of the study, and limitations and delimitations of the study.

Section II describes the methodology used for this study, includes the sample and context, instrumentation, design, and data collection and analysis procedures. Section III presents the results of the study, and Section IV makes recommendations to the district based on the findings in this study.

## **FIELD-INITIATED RESEARCH REPORT**

### **August, 2001**

## **SECTION II**

### **Methodology**

The purpose of this study was to observe and describe the instructional practices used in 102 bilingual classrooms in Aldine Independent School District (AISD) using the Transitional Bilingual Observation (TBO) Protocol. Lara-Alecio and Parker (1994) developed the TBO Protocol, an observation instrument, from their four-dimensional pedagogical model. The methodology employed in the research and presented in this chapter describes in detail the sample, context, instrumentation, design, procedure and data analysis of the study.

### **Sample and Context of Study**

This comprehensive evaluation of a district's effectiveness in delivering a bilingual education program to bilingual students took place in AISD, a large urban school district located in southeast Texas. The 17 schools in the study served students, Pre-Kindergarten through fourth grade, in bilingual classrooms. Using the TBO Protocol, researchers observed bilingual teachers in 102 transitional bilingual classrooms. Each of the 17 schools also had regular monolingual and other bilingual classrooms. Additionally, third grade bilingual was included and was specifically investigated in this study since Texas requires TAAS to be administered for the first time at this grade level for placement to fourth grade beginning 2002. Therefore, TAAS at third grade level constitutes a high-stakes test. At the end of each year, LEP students are expected to have made one year of academic growth, and TAAS is one of the components examined in

determining whether a student is passed or retained (K. M. Roede, personal communication, May 15, 2000).

Much of the school district, which covers more than a hundred square miles, lies within the boundaries of one of the nation's largest cities; however, the majority of the schools are located in unincorporated areas of the county. It is the third largest district in the county and the eleventh largest district in the state. The district serves approximately 51,000 students on 64 campuses: four Head Start centers, five early childhood/pre-kindergarten centers, 28 elementary schools, eight intermediate schools, seven middle schools, four ninth-grade schools, six high schools, a school for students with special needs, an alternative education placement center, and an adaptive behavior center. Fourteen schools are magnet schools, and one is a night high school that serves students who work and parenting students. The district is divided into four geographical areas, and a fifth area encompasses the magnet schools, which are located throughout the district.

Student demographics are: 49% Hispanic 36% African American, 11.4% Caucasian, 3.5% Asian/Pacific Islander, and .1%. School records of student participation in free and reduced lunch indicate 70.5% of the students are economically disadvantaged. The average retention rate in grades K-4 is 5%, with the largest retention rate, 16%, being in second grade.

The Hispanic population, the fastest-growing group in the district, gains approximately 1,500 students from Latin American countries each year, with a heavy concentration from Mexico. The student enrollment includes first-, second-, and third-generation Mexican Americans (Harville, 2000).

The school district's bilingual program was structured in compliance with Texas Education Agency (TEA) guidelines. Harville, Cavazos, and Roede (1999) stressed that the educational goal for the bilingual program is to provide a high quality education for culturally and linguistically diverse students in a way that:

1. Provides instruction for the child in the most appropriate format in accordance with TEA guidelines.
2. Provides instruction which reflects Texas Essential Knowledge and Skills and the district's benchmark targets.
3. Promotes acceptance of bilingual/ESL instruction as an integral part of the whole school program.
4. Develops behavior patterns which will make each student a responsible member of society.
5. Enhances the student's self-esteem and the positive climate of the school.
6. Evaluates data and makes adjustments to continually improve student learning at both campus and district levels.
7. Develops higher teacher competencies through in-depth training of all staff on cultural and linguistic diversity, variety of strategies/methodology, and second-language acquisition.
8. Solves increasing staffing shortages and instructional organizational arrangements.
9. Communicates successes of bilingual/ESL programs to students, parents, district, and community (Harville, Cavazos, & Roede, 1999).



The bilingual classroom teachers in this study were both male and female and spoke both Spanish and English. Fifty-seven percent were certified bilingual teachers; 38% were in the process of acquiring bilingual certification; 3% were native Spanish speakers who had alternative bilingual certification, and 1% were long-term substitutes.

If a Home Language Survey completed by a student's parents indicated that the language spoken in the home was Spanish, the student was administered the Woodcock-Muñoz test or the IDEA test. Test results were used to determine the student's dominant language and initial reading and writing level. A child who was identified as limited English proficient (LEP) was placed in a bilingual classroom; therefore, all children in the 102 classrooms were identified as LEP.

### **Instrumentation**

#### Transitional Bilingual Observation Protocol

For the initial purpose of judging inter-rater reliability and stability of observation results, the researchers used the Transitional Bilingual Observation (TBO) Protocol. The observation instrument was developed from the Transitional Bilingual Pedagogical (TBP) Model, a four-dimensional pedagogical model, by Lara-Alecio and Parker (1994) for observations of teachers in fourth grade transitional bilingual classrooms. The four dimensions of the TBO Protocol are (a) Language Content, (b) Language of Instruction, (c) Communication Mode, and (d) Activity Structure (See Appendix A for Model and TBOP). Lara-Alecio and Parker (1994) described the purposes of the model:

The purposes of this model are three. First, we wish to specify and integrate those theoretical notions which show most promise for pedagogical utility (i. e. notions which can be translated into manipulable elements of the classroom environment). In addition, we wish to identify classroom elements which teachers have the ability to adjust to enhance student learning. Second, we seek a pedagogical model which can be validated (i. e. can be translated into reliably observable and codable elements). Our third purpose is to create an observational tool with potential use for formative program evaluation—for formative judgments about the presence and absence of valued elements in the learning process. To serve this last purpose, it would usually be used in conjunction with measures of student performance (p. 121).

Bruce (1995) conducted a study in which the TBP model was operationalized and used to observe fifth grade transitional bilingual classrooms during an intensive summer program. Using Cohen's Kappa, interrater reliability was calculated, and strong interrater reliability (above 0.90) was established for all observational categories except Language of Instruction and Curriculum Area, which "were unable to be calculated" (p. 5). Breunig (1998) conducted multiple classroom observations within 43.1 hours and reported that score stability for language across grade levels for 15-minute samples was acceptable. During both 30-second momentary sampling (Phase 2) and 20-second interval time sampling (Phase 3), agreement between the researchers was strong "with a Kappa of .83 for

Phase 3 and a Kappa of .82 for Phase 2” (p. 46). From Bruce’s (1995) study, it appeared that “the TBO protocol could provide reliable information that the student was LEP and would benefit from placement in a bilingual program” (Breunig, 1998, p. 42).

#### Teachers’ Perception Questionnaire

Bruenig (1998) developed a 24-item Teacher Questionnaire on Language Usage, or TQLU (See Appendix B), and validated it in classrooms at an elementary bilingual campus in an urban district. At the beginning of each semester, all teachers involved in the study completed a questionnaire. Teachers were instructed to circle the language they used for instructing their bilingual students in the classroom. On twelve of the items, the teachers’ choices were: (1) English only; (2) mostly English, some Spanish; (3) 50% English, some Spanish; (4) mostly Spanish, some English; or (5) Spanish only. Teachers were instructed to indicate the percentages of Spanish and/or English they used in teaching situations on nine of the items. The remaining items asked years of teaching experience, type of certification and an open-ended question related to language usage. For the purpose of this study, only item 15 was included as relevant, along with the demographic data.

#### The Four Dimensions of the TBO Protocol

The four dimensions of the TBOP Protocol are described as follows by Bruce, et al., (1997).

Language Content. The Language Content dimension is derived from and expands Cummins’ (1986) influential Basic Interpersonal Communication Skills (BICS)

and Cognitive-Academic Language Proficiency (CALP) skills. The BICS and CALP distinctions were initially useful, but the main limitations (Trueba, 1989) of this simple dichotomy are that it has obscured all classroom communication on a continuum between BICS and CALP, and it has discouraged examination of student progress in the vast “middle area.” The Transitional Bilingual Pedagogical Model (TBP Model) reformulates BICS and CALP as malleable levels of discourse rather than as fixed or long-term abilities. The TBP Model also intersperses two additional levels to create a total of four levels of language content. They are as follows: (1) Social Routines (i. e., social exchanges and conversations), (2) Academic Routines (i. e., preparing for recess, returning books, collecting lunch money, learning strategies, handing in assignments, and structuring homework), (3) Light Cognitive Content (i. e., current events, discussion of the school fiesta, multicultural education issues, and repetitive skills and practices), and (4) Dense Cognitive Content (i. e., new content-area information, problem solving, critical thinking activities, and conceptually loaded communication with specialized vocabulary and procedures).

Language of Instruction. The TBP Model’s second dimension, Language of Instruction, presents four progressive uses of native (L1) and second (L2) language in the classroom: (1) content is presented in L1; (2) L1 introduces L2; (3) L2 is supported and clarified by L1; and (4) content is presented in L2. This dimension acknowledges the transitional nature of transitional bilingual education. It also confirms the importance of content areas as rich sources of language input for LEP children (Cummins, 1986) and as vehicles for language learning (Krashen, 1985). Language of instruction usually refers to

the teacher's use of language; however, it also may refer to the reading test used or the language used by students in cooperative learning groups.

Communication Mode. The TBP Model acknowledges two language modes. One is the receptive mode determined through aural and reading input, and the other is the expressive mode which is acknowledged through verbal communication and writing. Cummins' (1986) "reciprocal interaction model" and the "content-specific" model of Diaz, Moll, and Mehan (1970) both support the practice of multiple modalities for second language acquisition. These modalities are important in the understanding of curriculum content areas. Their differentiation within the TBP Model indicates that English facility may not be unitary, but may vary by communication mode.

Activity Structures. Academic Activity Structures are operationally defined in the TBP Model as combinations of: (a) type of behavior (e.g. directing, leading, evaluating, observing), and (b) the expectation for student behavior or responses (e.g. listening, performing, discussing, asking questions, answering questions, cooperative learning). A few classroom activity structures (e.g. time spent disciplining, transitions between classes) are considered non-academic. Most classroom activity structures are defined by combinations of two activities, signifying the main teacher behavior, plus the primary student expected behavior (Parker, Tindal, & Hasbrouck, 1994). Therefore, when a teacher mainly lectures or presents information and students are mainly expected to listen, the activity structure is identified as lecture/listen (Lec/Lis). Three additional model-based indices are included in the activity structures: (1) duration and activity, (2) curriculum subject, and (3) the physical grouping or arrangement of the students.

## Design

The design of the research combined both descriptive and correlational methodology using both parametric and nonparametric data. For elementary bilingual classrooms in 17 schools, observations were scheduled on all campuses during both semesters, Fall, 1999, and Spring, 2000.

Frequency of occurrence of the four dimensions of the Transitional Bilingual Observation Protocol—Language Content, Language of Instruction, Communication Mode, and Activity Structure) was the dependent variable in this study as measured through systemic observation. The separate classrooms or campuses constituted the independent variable. An additional variable of student achievement on the Texas Assessment of Academic Skills was analyzed as a dependent variable with the frequency of occurrence of the four dimensions and grade level becoming the independent variables.

## Procedure

This study was conducted during the 1999-2000 school year, from September through November of 1999 and in February, March and April of 2000. Human subjects approval was granted by the superintendent of schools. The area superintendent and bilingual program directors provided a list of 17 schools with bilingual populations. The researchers contacted each principal and asked permission to observe bilingual teachers on that campus. Observation times were scheduled through the principal. Teachers were informed of the general observation periods by their principal. Teachers were provided

with a letter explaining the purpose and affiliation of the research and were advised that the observations would not affect their regular teacher evaluation results.

Data were collected by two researchers, one who is a school district administrator and was a bilingual fellow, and the other, a data collector who had successfully completed a Master's course in research methodology and who was a bilingual graduate assistant fluent in both Spanish and English. The graduate assistant, who has five years of professional experience as a bilingual teacher and who has previously been employed by the school district, was paid with Title VII grant funding. The researchers were trained by the developer of the TBP Model.

Weekly observations of 1.5 hours (61 observations total) in each classroom during language arts, math, and one content area (science or social studies) were conducted, with the code for each dimension recorded every twenty-second time interval. Approximately thirty-minute observations captured the content area for this study. A total time sampling of 18,880 twenty-second observations were recorded for the combined semesters.

A questionnaire was distributed to the teachers to complete during the fall and spring observations, which solicited perceptions of teachers' engagement in the four dimensions. Their perceptions compared with their actual performance as observed in the TBOP. Data were entered weekly by a student research assistant using SPSS for Windows.

### **Data Analysis**

The sample consisted of 18,880 twenty-second observations in 102 Spanish/English bilingual classrooms during combined semesters. The sample comprised

the students' 102 teachers for Teacher Questionnaire of Language Usage (TQLU) variables. All research questions addressed language and the content reading areas of science and social studies.

Except where noted, all questions were answered using cross-tabulations, along with Pearson's chi-square ( $\chi^2$ ) results and cell percentages, the latter replaced by raw counts as appropriate for clarity. Two cases were accompanied by little valid data and were therefore excluded from the analyses.

Following are the seven research questions which guided this study in the content subjects of science and social studies in 102 Spanish/English transitional bilingual classrooms in three content areas in AISD. Each research question is followed by the specific statistical analysis that was employed.

#### Research Question 1

Which language of instruction do teachers predominately use?

For this question, language of instruction-teacher was analyzed by semester and by combined semesters using cross tabulation of Language Content by language of instruction. The analysis included descriptive statistics of frequency and percentage.

#### Research Question 2

To what extent is the language of instruction used by teachers associated with Language Content?

Cross-tabulations and a Pearson's chi-square analysis were the procedures used. Because the data were qualitative, it was appropriate to obtain frequency counts and conduct chi-square analyses.



### Research Question 3

To what extent is the language of instruction associated with language mode?

Cross-tabulations and Pearson's chi-square analysis were the procedures used. Because the data were qualitative, it was appropriate to obtain frequency counts and conduct chi-square analyses.

### Research Question 4

To what extent does each level of Language Content occur with each Activity Structure?

For this research question, cross-tabulations and Pearson's chi-square analysis were the procedures used. Because the data were qualitative, it was appropriate to obtain frequency counts and conduct chi-square analyses.

### Research Question 5

Is there an association between classroom observations and teachers' perceptions of their language of instruction?

Results were analyzed by calculating Pearson's  $r$  with proportions derived from the dichotomized variable. This parametric correlation coefficient could be used because the data showed little non-normality and because all variables used could be considered continuous.

### Research Question 6

What are the associations between the four dimensions of TBP theory and elementary bilingual students' reading scores on the high-stakes assessment, TAAS?

Cross-tabulations and Pearson's chi-square analysis were the procedures used. Due to the fact that data were qualitative, it was appropriate to obtain frequency counts

and conduct chi-square analyses. Because there were 345 valid TAAS tests in the 17 teachers' classrooms, the total observations of language of instruction were calculated proportionately by teacher to match the teachers and their number of students taking TAAS (valid proportions were used); additionally, the language in which the TAAS was taken was recorded and used in the analysis. TAAS raw scores were re-coded into a binomial variable as raw scores were converted to scale scores and determined to be a pass or fail. A cross-tabulation with language of test and language of instruction, layered with the pass/fail rating of the TAAS reading score was calculated with Pearson's chi-square analysis and Cramer's V test of the strength of relationship.

**FIELD-INITIATED RESEARCH REPORT**  
**August, 2001**

**SECTION III**  
**RESULTS AND DISCUSSION**

The purpose of this study was to observe and describe the instructional practices in reading, math, and content reading areas of science and social studies in 102 transitional bilingual classrooms in Aldine Independent School District using the Transitional Bilingual Observation Protocol (TBOP). The observed pedagogical occurrences were studied in relation to high stakes assessment. Each research question is answered and discussed in this Section of the report.

Research Question 1: Which language of instruction is predominately used?

For this question, the variable analyzed was language of instruction by the teacher. The results are reported by curriculum areas, by grade level, and by semester.

During the first semester there were 9,540 observations for grades Pre-Kindergarten (PK) through fourth grade in all curriculum areas combined. All of the 90 observations were counted as missing data. Teachers from grades PK through Fourth grade used Spanish 70.9% of the time and English 19.5% of the time. Pre-Kindergarten teachers used Spanish (L1) 96.5% of the time and English .3% of the time during observed instruction; they used clarifications of L1 introducing L2 only .2% of the time, and they were silent 3% of the time. Kindergarten teachers used Spanish (L1) 85.9% of the time and English 6.8% of the time during observed instruction; they used clarifications of L1 introducing L2 only .8% of the time, and L2 clarified by L1 1.1% of the time, and they were silent 5.5% of the time. First grade teachers used Spanish (L1)

82.5% of the time and English 9.2% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1% of the time, and L2 clarified by L1 .1% of the time, and they were silent 7.2% of the time. Second grade teachers used Spanish (L1) 65.9% of the time and English 23.1% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1% of the time, and L2 clarified by L1 2.7% of the time, and they were silent 7.3% of the time. Third grade teachers used Spanish (L1) 41.8% of the time and English 45.1% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1.7% of the time, and L2 clarified by L1 3.3% of the time, and they were silent 8.1% of the time. Fourth grade teachers used Spanish (L1) 37.8% of the time and English 47.9% of the time during observed instruction; they used clarifications of L1 introducing L2 only .2% of the time, and L2 clarified by L1 1.9% of the time, and they were silent 12.2% of the time. Figure 1 provides a graphic depiction of the first semester by grade level and by language instruction of the teacher for all curriculum areas observed.

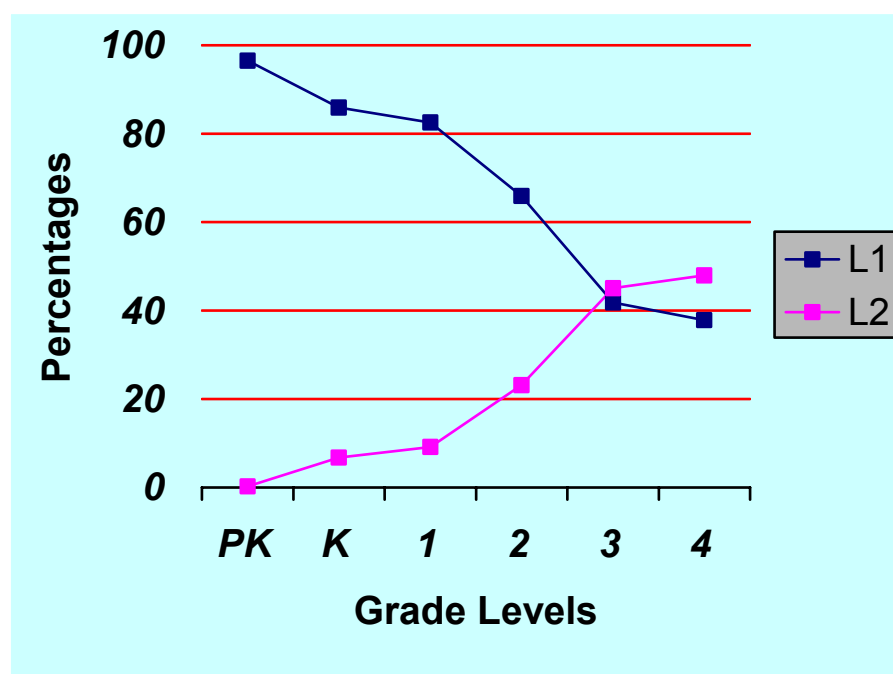


Figure 1. Language of Instruction of Teacher, First Semester (L1 & L2)

During the second semester there were 9,339 observations for grades Pre-Kindergarten (PK) through Fourth grade for all curriculum areas combined. Teachers from grades PK through Fourth grade used Spanish in 62% of the time and English 19.4% of the time. Pre-Kindergarten teachers used Spanish (L1) 86.9% of the time and English .9% of the time during observed instruction, and they were silent 12.2% of the time. Kindergarten teachers used Spanish (L1) 80.1% of the time and English 4.8% of the time during observed instruction; they used clarifications of L1 introducing L2 only 3.1% of the time, and L2 clarified by L1 .9% of the time, and they were silent 11.1% of the time. First grade teachers used Spanish (L1) 74.6% of the time and English 8.1% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1.6% of the time, and L2 clarified by L1 1.1% of the time, and they were silent 14.7% of the time. Second grade teachers used Spanish (L1) 55.1% of the time and English 22.8%

of the time during observed instruction; they used clarifications of L1 introducing L2 only 2.6% of the time, and L2 clarified by L1 3.4% of the time, and they were silent 16.1% of the time. Third grade teachers used Spanish (L1) 34.7% of the time and English 44.7% of the time during observed instruction; they used clarifications of L1 introducing L2 only 4.1% of the time, and L2 clarified by L1 2.6% of the time, and they were silent 13.9% of the time.

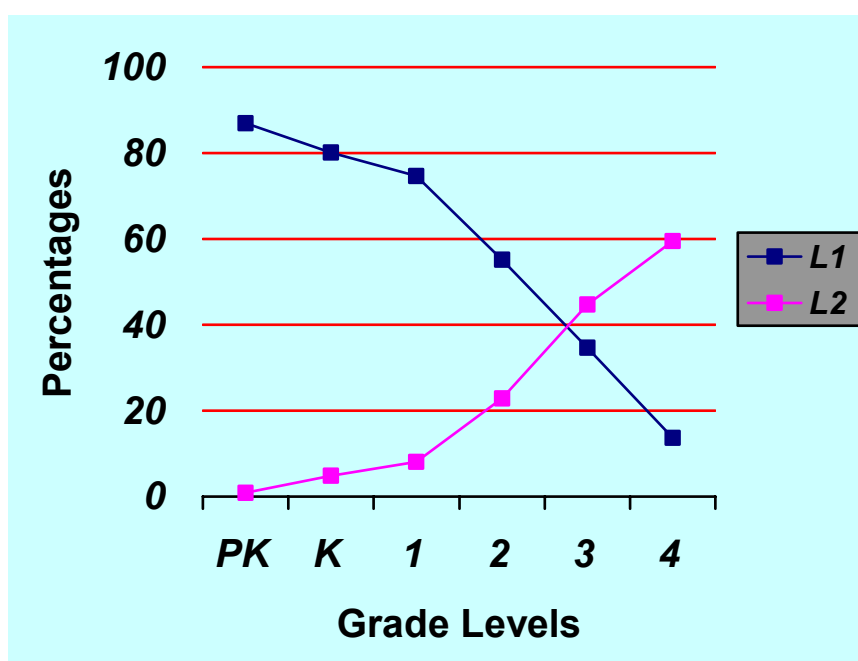


Figure 2. Language of Instruction of Teacher, Second Semester (L1 & L2)

Fourth grade teachers used Spanish (L1) 13.7% of the time and English 59.5% of the time during observed instruction; they used clarifications of L1 introducing L2 only 5.2% of the time, and L2 clarified by L1 2.7% of the time, and they were silent 18.9% of the time. Figure 2 provides a graphic depiction of the second semester by grade level by language instruction of the teacher for all curriculum areas observed.

Combined semesters yielded 18,879 observations for grades Pre-Kindergarten (PK) through Fourth grade for all curriculum areas combined, with 90 observations coded as missing data. Teachers from grades PK through Fourth used Spanish in 66.5% of the time and English 19.5% of the time. Pre-Kindergarten teachers used Spanish (L1) 91.7% of the time and English .6% of the time during observed instruction; they used clarifications of L1 introducing L2 .1% of the observed time, and they were silent 7.6% of the time. Kindergarten teachers used Spanish (L1) 82.9% of the time and English 5.8% of the time during observed instruction; they used clarifications of L1 introducing L2 only 2% of the time, and L2 clarified by L1 1% of the time, and they were silent 8.4% of the time. First grade teachers used Spanish (L1) 78.7% of the time and English 8.7% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1.3% of the time, and L2 clarified by L1 .6% of the time, and they were silent 10.8% of the time. Second grade teachers used Spanish (L1) 60.4% of the time and English 23% of the time during observed instruction; they used clarifications of L1 introducing L2 only 1.8% of the time, and L2 clarified by L1 3.1% of the time, and they were silent 11.7% of the time. Third grade teachers used Spanish (L1) 38.2% of the time and English 44.9% of the time during observed instruction; they used clarifications of L1 introducing L2 only 2.9% of the time, and L2 clarified by L1 2.9% of the time, and they were silent 11.1% of the time. Fourth grade teachers used Spanish (L1) 27.2% of the time and English 53% of the time during observed instruction; they used clarifications of L1 introducing L2 only 2.4% of the time, and L2 clarified by L1 2.2% of the time, and they were silent 15.1% of

the time. Figure 3 provides a graphic depiction of the combined semesters by grade level by language instruction of the teacher for all curriculum areas observed.

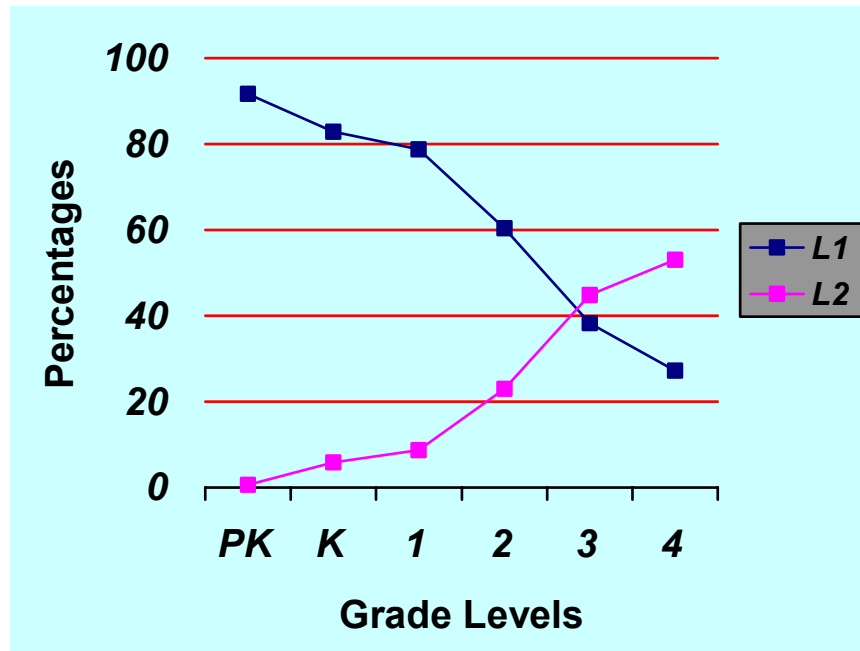


Figure 3. Language of Instruction of Teacher, Combined Semesters (L1 & L2)

It appears that language of instruction by teacher in L1 decreased by 8.9% from first semester to second semester; however, for L2, the percentage remained almost the same. For a transitional bilingual program, it is expected that the teacher will decrease L1 and increase L2 from semester one to semester two, but the findings in this study did not support this expectation. Nor did the findings support the district's expectation that Third grade teachers would teach 50% Spanish language instruction and 50% English language instruction. Appendix A provides graphs and tables for each of the major subject areas (reading, math, science, social studies) by grade level for language of instruction of the teacher.



Research Question 2: To what extent is the language of instruction used by teachers associated with Language Content?

To answer this question, cross-tabulations with frequencies, percentages and Pearson's  $\chi^2$  were the methods used to analyze curriculum areas for reading, content reading (science and social studies), and mathematics. Since  $\chi^2$  statistics only indicates independent or non-independent relationships related to proportions and is influenced by sample size, Cramer's V was also calculated. Cramer's V measures the strength of the relationship between variables and is not influenced by sample size. A Cramer's V statistic ranges between 0 and 1 denoting the power of the relationship between the variable; with the Cramer's V statistic in a larger than 2x2 table, it is the same and equal to the Pearson correlation coefficient; therefore, squared, it becomes much like an  $r^2$  type effect size or proportion of variance accounted for. Results of Pearson's  $\chi^2$  test in all categories were unreliable due to more than 20% of cell counts less than 5 with expected cell count less than 1. This is possibly due to the observations that were logged mainly in the light cognitive content area. To use the data would be to report it in violation of the assumptions guiding the statistical test. A remedy for this situation is to delete cells for further analysis with Chi Square, which is beyond the purposes of this study.

Data tables by semester and curriculum area are reported in Appendix B.

Curriculum Area: Reading, First Semester

For first semester in the curriculum area of reading there were 3,476 observations with 25 observations counted as missing data. Second semester yielded 3,203

observations with 25 observations coded as missing data. Combined semesters indicated a total number of observations at 6,679 with 25 missing data codes.

Pre-Kindergarten/Kindergarten (combined classroom). The data indicated that during the first semester with an  $n$  of 30, the Pre-Kindergarten/Kindergarten teacher (one classroom was observed that was categorized as such) taught in light cognitive content in Spanish 96.2% of the time and in academic routines in Spanish 3.8% of the time. The teacher was not observed teaching English. Overall, this teacher was observed teaching 3.3% in academic routines and 96.7% in light cognitive content. The classroom was not observed second semester.

Pre-Kindergarten. The data indicated that during the first semester with an  $n$  of 319, Pre-Kindergarten teachers taught in light cognitive content in Spanish 91.5% of the time and in dense cognitive content in Spanish 2.2% of the time. When the teachers were observed teaching in English, they spent 100% of the time teaching in light cognitive content. Overall, Pre-Kindergarten teachers were observed teaching 6.3% in academic routines, 91.5% in light cognitive content and 2.2% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 225, Pre-Kindergarten teachers taught in light cognitive content in Spanish 72.4% of the time. Teachers were not observed teaching in English. Overall, Pre-Kindergarten teachers were observed teaching 2.0% in academic routines and 75% in light cognitive.

The data indicated that during the combined semesters with an  $n$  of 619, Pre-Kindergarten teachers taught in light cognitive content in Spanish 82.8% of the time. When the teachers were observed teaching in English (only 2 observations), they spent

100% of the time teaching in light cognitive content. Overall, Pre-Kindergarten teachers were observed teaching 4.2% in academic routines and 83.5% in light cognitive.

Kindergarten. The data indicated that during the first semester with an  $\underline{n}$  of 613, Kindergarten teachers taught in light cognitive content in Spanish 73.4% of the time and in dense cognitive content in Spanish 8.3% of the time. When the teachers were observed teaching in English, they spent 93.3% of the time teaching in light cognitive content. Overall, Kindergarten teachers were observed teaching 3.3% social routines, 15.2% in academic routines, 73.7% in light cognitive content and 7.8% in dense cognitive content.

The data indicated that during the second semester with an  $\underline{n}$  of 652, Kindergarten teachers taught in light cognitive content in Spanish 71.9% of the time. When the teachers were observed teaching in English, they spent 24.1% of the time teaching in light cognitive content. Overall, Kindergarten teachers were observed teaching 2.5% social routines, 15% in academic routines and 67.3% in light cognitive content.

The data indicated that during the combined semesters with an  $\underline{n}$  of 1,265, Kindergarten teachers taught in light cognitive content in Spanish 72.7% of the time, in academic routines 15.1%, and in social routines 1.9%. When the teachers were observed teaching in English, they spent 47.7% of the time teaching in light cognitive content and 52.3% in academic routines. Overall, Kindergarten teachers were observed teaching 2.8% social routines, 15.1% in academic routines and 80.5% in light cognitive content.

First Grade. The data indicated that during the first semester with an  $\underline{n}$  of 839, first grade teachers taught in light cognitive content in Spanish 72.4% of the time, in dense cognitive content in Spanish 8.7% of the time, in social routines in Spanish 3.2%,

and in academic routines 15.7% in Spanish. When the teachers were observed teaching in English, they spent 87.7% of the time teaching in light cognitive content and 12.3% of the time teaching in academic routines. Overall, first grade teachers were observed teaching 2.6% social routines, 16.2% in academic routines, 72.1% in light cognitive content and 9.1% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 412, first grade teachers taught in light cognitive content in Spanish 57.9% of the time, in social routines in Spanish .4%, and in academic routines 19.5% in Spanish. When the teachers were observed teaching in English, they spent 48.3% of the time teaching in light cognitive content and 24.1% of the time teaching in academic routines. Overall, first grade teachers were observed teaching .3% social routines, 17.5% in academic routines, and 61% in light cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1017, first grade teachers taught in light cognitive content in Spanish 66.2% of the time, in social routines in Spanish 2%, and in academic routines 17.3% in Spanish. When the teachers were observed teaching in English, they spent 69.1% of the time teaching in light cognitive content and 17.9% of the time teaching in academic routines. Overall, first grade teachers were observed teaching 1.6% social routines, 16.8% in academic routines, and 67.2% in light cognitive content.

Second grade. The data indicated that during the first semester with an  $n$  of 704, second grade teachers taught in light cognitive content in Spanish 59.3% of the time, in dense cognitive content in Spanish 28.4%, in social routines in Spanish 1%, and in

academic routines 11.2% in Spanish. When the teachers were observed teaching in English, they spent 80.1% of the time teaching in light cognitive content, 15.4% of the time teaching dense cognitive content, and 4.5% of the time teaching in academic routines. Overall, second grade teachers were observed teaching .7% social routines, 10.2% in academic routines, 64.2% in light cognitive content and 24.9% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 533, second grade teachers taught in light cognitive content in Spanish 63.5% of the time and in academic routines 13.5% in Spanish. When the teachers were observed teaching in English, they spent 59.2% of the time teaching in light cognitive content and 12.4% of the time teaching in academic routines. Overall, second grade teachers were observed teaching .5% social routines, 10.5% in academic routines, and 68.5% in light cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1482, second grade teachers taught in light cognitive content in Spanish 61.2% of the time and in academic routines 12.3% of the time in Spanish. When the teachers were observed teaching in English, they spent 69.2% of the time teaching in light cognitive content and 8.6% of the time teaching in academic routines. Overall, second grade teachers were observed teaching .6% social routines, 10.4% in academic routines, and 66.5% in light cognitive content.

Third grade. The data indicated that during the first semester with an  $n$  of 500, third grade teachers taught in light cognitive content in Spanish 81.7% of the time, in dense cognitive content in Spanish 7.4% of the time, in social routines in Spanish .4%,

and in academic routines 10.5% in Spanish. When the teachers were observed teaching in English, they spent 64.8% of the time teaching in light cognitive content, 31.6% of the time teaching dense cognitive content, and 3.6% of the time teaching in academic routines. Overall, third grade teachers were observed teaching 2% social routines, 7% in academic routines, 75.2% in light cognitive content and 17.6% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 320, third grade teachers taught in light cognitive content in Spanish 38.9% of the time and in academic routines 12.4% in Spanish. When the teachers were observed teaching in English, they spent 71.6% of the time teaching in light cognitive content and 7.4% of the time teaching in academic routines. Overall, third grade teachers were observed teaching 7.5% in academic routines and 56.8% in light cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1063, third grade teachers taught in light cognitive content in Spanish 63.8% of the time and in academic routines 11.3% in Spanish. When the teachers were observed teaching in English, they spent 68.5% of the time teaching in light cognitive content and 5.6% of the time teaching in academic routines. Overall, third grade teachers were observed teaching .1% in social routines, 7.2% in academic routines and 65.5% in light cognitive content.

Fourth grade. The data indicated that during the first semester with an  $n$  of 471, fourth grade teachers taught in light cognitive content in Spanish 67% of the time, in dense cognitive content in Spanish 24.6% of the time and in academic routines 8.4% in Spanish. When the teachers were observed teaching in English, they spent 40.8% of the

time teaching in light cognitive content, 52.3% of the time teaching dense cognitive content, and 6.9% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 0% social routines, 7% in academic routines, 49.3% in light cognitive content and 43.5% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 210, fourth grade teachers taught in light cognitive content in Spanish 100% of the time. When the teachers were observed teaching in English, they spent 58.7% of the time teaching in light cognitive content, .8% of the time teaching dense cognitive content, and 7.1% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 0% social routines, 4.3% in academic routines, 63.3% in light cognitive content and .5% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 681, fourth grade teachers taught in light cognitive content in Spanish 67.5% of the time. When the teachers were observed teaching in English, they spent 48.3% of the time teaching in light cognitive content, .3% of the time teaching dense cognitive content, and 7% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 0% social routines, 6.2% in academic routines, 53.6% in light cognitive content and .1% in dense cognitive content.

The most meaningful data resulted in the percentage of time teachers were teaching cognitive content as opposed to having social interactions or routine transitions within the classroom. Those data are depicted in Figure 4.

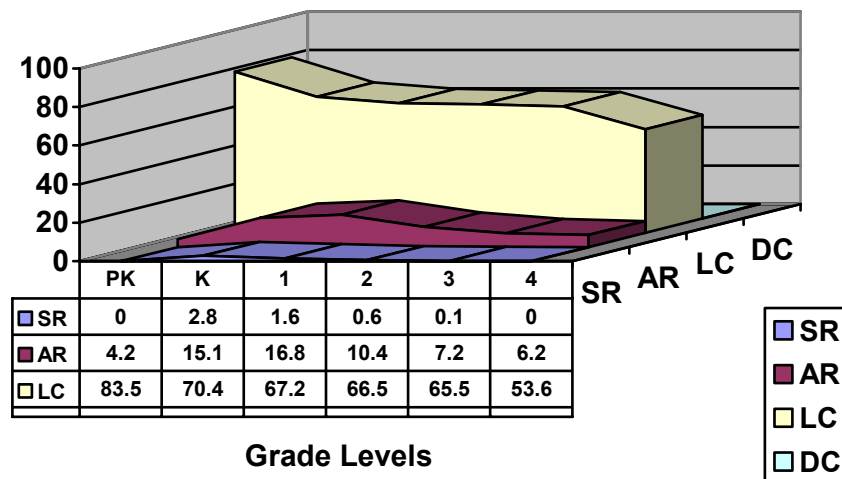


Figure 4. Percentage of Observed Time by Language Content

The data indicated for both semesters in the area of reading that teachers were using a significant portion of their time, whether they were teaching in L1 or L2, in teaching cognitively demanding content. Even when few observations accounted for clarifications in language of instruction; i.e., L1-2 or L2-1, up to 66% of those clarifications were in cognitive content instruction.

#### Curriculum Area: Content Reading Areas of Science and Social Studies

For first semester in the curriculum areas of content reading in science and social studies there were 2,542 observations with 2 observations counted as missing data. Second semester yielded 2,922 observations with 1 observation coded as missing data. Combined semesters indicated a total number of observations at 5,463 with 3 missing data codes.

Pre-Kindergarten/Kindergarten (combined classroom). The data indicated that during the first semester with an  $n$  of 30, the Pre-Kindergarten/Kindergarten teacher (one classroom was observed that was categorized as such) taught in light cognitive content in Spanish 86.7% of the time and in academic routines in Spanish 13.3% of the time. The



teacher was not observed teaching English. Overall, this teacher was observed teaching 6.7% in academic routines and 93.3% in light cognitive content. There were no observations in this classroom for second semester; therefore, for the combined semesters, first semester stands for the entire year's observation for this class.

Pre-Kindergarten. The data indicated that during the first semester with an n of 297, Pre-Kindergarten teachers taught in light cognitive content in Spanish 95.2% of the time and in dense cognitive content in Spanish 4.8% of the time. Teachers were not observed teaching English. Overall, Pre-Kindergarten teachers were observed teaching 4.4% in academic routines and 95.6% in light cognitive content.

The data indicated that during the second semester with an n of 328, Pre-Kindergarten teachers taught in light cognitive content in Spanish 79.6% of the time, in dense cognitive content 17.7% of the time, and in academic routine 2.6% of the time. When teachers were observed teaching in English, 100% of the time was spent in teaching light cognitive content. Overall, Pre-Kindergarten teachers were observed teaching 2.1% in academic routines, 81.1% in light cognitive, and 16.8% in dense cognitive content.

The data indicated that during the combined semesters with an n of 625, Pre-Kindergarten teachers taught in light cognitive content in Spanish 87.5% of the time, in dense cognitive content 8.8%, and in academic routine 3.7%. When the teachers were observed teaching in English (only 9 observations), they spent 100% of the time teaching in light cognitive content. Overall, Pre-Kindergarten teachers were observed teaching

3.2% in academic routines and 88% in light cognitive, and 8.8% in dense cognitive content.

Kindergarten. The data indicated that during the first semester with an  $\underline{n}$  of 586, Kindergarten teachers taught in light cognitive content in Spanish 1.1% of the time in social routine, 7.7% in academic routines, 81.8% in light cognitive content, and in dense cognitive content in Spanish 9.4% of the time. When the teachers were observed teaching in English, they spent 100% of the time teaching in light cognitive content. Overall, Kindergarten teachers were observed teaching 1% social routines, 7% in academic routines, 83.3% in light cognitive content and 8.7% in dense cognitive content.

The data indicated that during the second semester with an  $\underline{n}$  of 644, Kindergarten teachers taught in Spanish, .7% in social routine, 20.4% in academic routine, 71.3% in light cognitive content and 7.5% in dense cognitive content. When the teachers were observed teaching in English, they spent 100% of the time teaching in light cognitive content. Overall, Kindergarten teachers were observed teaching 1.2% social routines, 17.4% in academic routines, 71.4% in light cognitive content, and dense cognitive content in 9.9%.

The data indicated that during the combined semesters with an  $\underline{n}$  of 1230, Kindergarten teachers taught in light cognitive content in Spanish .9% of the time in social routines, 14.1% of the time in academic routines, 76.5% in light cognitive content, and 8.4% in dense cognitive content. When the teachers were observed teaching in English, they spent 100% of the time teaching in light cognitive content. Overall,

Kindergarten teachers were observed teaching 1.1% social routines, 12.4% in academic routines, 77.1% in light cognitive content, and 9.3% in dense cognitive content.

First Grade. The data indicated that during the first semester with an  $n$  of 591, first grade teachers taught in light cognitive content in Spanish 8.8%% of the time in academic routine, in light cognitive content in Spanish 64.9% of the time, and in academic routines 26.3% in Spanish. When the teachers were observed teaching in English, they spent 12.9% of the time in academic routine, 38.7% of the time teaching in light cognitive content and 48.4% of the time teaching in dense cognitive content. Overall, first grade teachers were observed teaching .7% social routines, 8.5% in academic routines, 66% in light cognitive content and 24.9% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 667, first grade teachers taught in dense cognitive content in Spanish 21.9%, light cognitive content in Spanish 62% of the time, in social routines in Spanish .4%, and in academic routines 15.7% in Spanish. When the teachers were observed teaching in English, they spent 22.7% of the time teaching in dense cognitive content, 58% of the time teaching in light cognitive content and 19.3% of the time teaching in academic routines. Overall, first grade teachers were observed teaching 1.5% social routines, 15% in academic routines, 63.6% in light cognitive content, and 19.9% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1258, first grade teachers taught in dense cognitive content in Spanish 24.2% of the time, light cognitive content in Spanish 63.5% of the time, in social routines in Spanish .2%, and in academic routines 12% in Spanish. When the teachers were observed teaching in English,

they spent 29.4% of the time teaching in dense cognitive content, 52.9% of the time teaching in light cognitive content and 17.6% of the time teaching in academic routines. Overall, first grade teachers were observed teaching 1.1% social routines, 11.9% in academic routines, 64.7% in light cognitive content, and 22.3% in dense cognitive content.

Second grade. The data indicated that during the first semester with an  $n$  of 625, second grade teachers taught in light cognitive content in Spanish 70.5% of the time, in dense cognitive content in Spanish 9.7% of the time, in social routines in Spanish 5.6%, and in academic routines 14.2% in Spanish. When the teachers were observed teaching in English, they spent 50.5% of the time teaching in light cognitive content, 38.7% of the time teaching dense cognitive content, 10.3% of the time teaching in academic routines, and .5% of the time teaching in social routines. Overall, second grade teachers were observed teaching 3.7% social routines, 12.2% in academic routines, 63.5% in light cognitive content and 20.6% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 630, second grade teachers taught in dense cognitive content in Spanish 21.4% of the time, in light cognitive content in Spanish 71.1% of the time, and in academic routines 7.5% in Spanish. When the teachers were observed teaching in English, they spent 24.7% of the time teaching in dense cognitive content, 70% of the time teaching in light cognitive content, 4.7% of the time teaching in academic routines, and .6% of the time teaching in social routines. Overall, second grade teachers were observed teaching .2% social routines, 5.7% in

academic routines, 71.6% in light cognitive content, and 22.5% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1255, second grade teachers taught in dense cognitive content in Spanish 15.1% of the time, in light cognitive content in Spanish 70.8% of the time, in academic routines 11.1% in Spanish, and in social routines 3% in Spanish. When the teachers were observed teaching in English, they spent 32.1% of the time teaching in dense cognitive content, 59.6% of the time teaching in light cognitive content, 7.7% of the time teaching in academic routines, and .5% in social routines. Overall, second grade teachers were observed teaching 1.9 % social routines, 8.9% in academic routines, 67.6% in light cognitive content, and 21.6% in dense cognitive content.

Third grade. The data indicated that during the first semester with an  $n$  of 263, third grade teachers taught in light cognitive content in Spanish 87% of the time, in social routines in Spanish 4.3%, and in academic routines 8.7% in Spanish. When the teachers were observed teaching in English, they spent 48.6% of the time teaching in light cognitive content, 41% of the time teaching dense cognitive content, and 6.9% of the time teaching in academic routines, and 3.5% in social routines. Overall, third grade teachers were observed teaching 3.4% social routines, 7.2% in academic routines, 62% in light cognitive content and 27.4% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 443, third grade teachers taught in dense cognitive content in Spanish 41% of the time, in light cognitive content in Spanish 57.6% of the time, and in academic routines 1.4% in Spanish. When

the teachers were observed teaching in English, they spent 20.4% of the time teaching in dense cognitive content, 70% of the time teaching in light cognitive content, 9.1% of the time teaching in academic routines, and .4% of the time teaching in social routines. Overall, third grade teachers were observed teaching .2% in social routines, 8.1% in academic routines, 63.2% in light cognitive content, and 28.4% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 706, third grade teachers taught in dense cognitive content in Spanish 25%, in light cognitive content in Spanish 69.1% of the time, in academic routines 4.2% in Spanish, and in social routines 1.7% in Spanish. When the teachers were observed teaching in English, they spent 28.3% of the time teaching in dense cognitive content, 61.8% of the time teaching in light cognitive content, 8.3% of the time teaching in academic routines, and 1.6% of the time teaching in social routines. Overall, third grade teachers were observed teaching 1.4% in social routines, 7.8% in academic routines, 62.7% in light cognitive content, and 28% in light cognitive content.

Fourth grade. The data indicated that during the first semester with  $n$  of 149, fourth grade teachers taught in light cognitive content in Spanish 50% of the time and in dense cognitive content in Spanish 50% of the time. When the teachers were observed teaching in English, they spent 67.7% of the time teaching in light cognitive content, 28.1% of the time teaching dense cognitive content, and 4.2% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 2.7% in academic routines, 54.4% in light cognitive content and 43% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 210, fourth grade teachers taught in light cognitive content in Spanish 40% of the time and 60% of the time in dense cognitive content. When the teachers were observed teaching in English, they spent 54% of the time teaching in light cognitive content, 36.5% of the time teaching dense cognitive content, and 9.5% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 5.7% in academic routines, 61.9% in light cognitive content and 32.4% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 359, fourth grade teachers taught in light cognitive content in Spanish 44.8% of the time and in dense cognitive content in Spanish 55.3%. When the teachers were observed teaching in English, they spent 59.9% of the time teaching in light cognitive content, 32.9 % of the time teaching dense cognitive content, and 7.2% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching 4.5% in academic routines, 58.8% in light cognitive content and 36.8% in dense cognitive content.

The most meaningful data resulted in the percentage of time teachers were teaching cognitive content as opposed to having social interactions or routine transitions within the classroom. Those data are depicted in Figure 5.

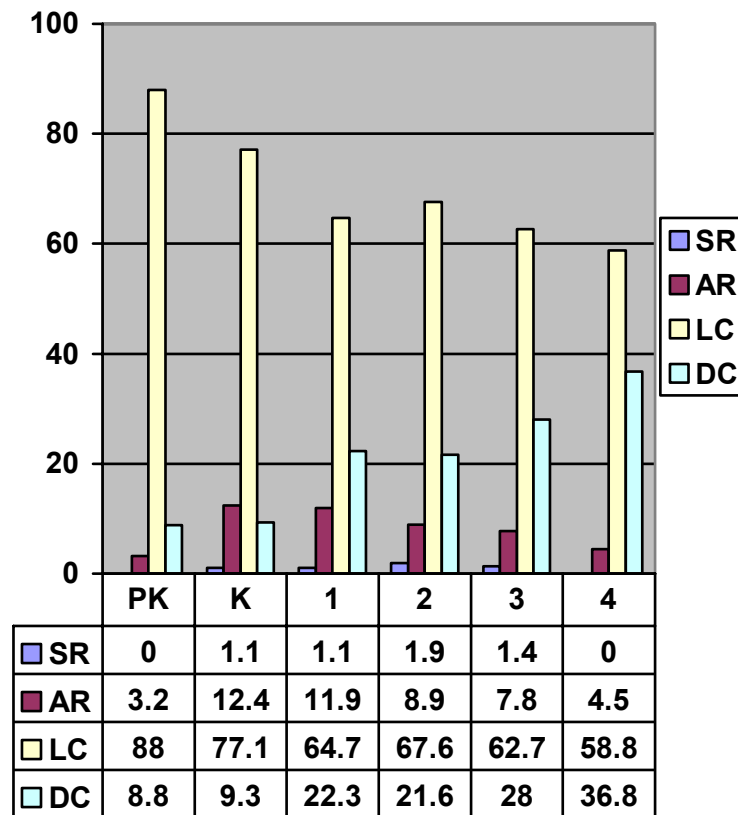


Figure 5. Percentage of Observed Time by Language Content

The data indicated for both semesters in the area of content reading that teachers were using a significant portion of their time, whether they were teaching in L1 or L2, in teaching cognitively demanding content. Even when few observations accounted for clarifications in language of instruction; i.e., L1-2 or L2-1, up to 100% of those clarifications were in cognitive content instruction.



Also significant to note in the area of content reading where one would expect to observe more clarifications of language due to the nature of science and social studies content, the data indicated that in Pre-Kindergarten or the Pre-Kindergarten/Kindergarten combined, there were no clarifications observed. For example, there was no Spanish introducing English and no English clarified by Spanish. For Kindergarten there was .9% of clarifications observed. For First Grade, there were 3.6% observations of clarifications of language use. For Second Grade, there were 3.6% observations of clarifications of language use. For Third Grade, there were 5.4 % observations of clarifications of language use. For Fourth Grade, there were 13.2 % observations of clarifications of language use. Clarifications appeared to increase as grade levels increased; this is possibly due to the fact that the subject matter becomes more difficult to understand as English usage is increased through the grade levels.

#### Curriculum Area: Mathematics

For first semester in the curriculum mathematics there were 2,982 observations with 1 observation counted as missing data. Second semester yielded 3,005 observations with 5 observations coded as missing data. Combined semesters indicated a total number of observations at 5,987 with 6 missing data codes.

Pre-Kindergarten/Kindergarten (combined classroom). The data indicated that during the second semester with an n of 30, the Pre-Kindergarten/Kindergarten teacher (one classroom was observed that was categorized as such) taught in light cognitive content in Spanish 100% of the time. The teacher was not observed teaching English. Overall, this teacher was observed teaching 100% in light cognitive content. There were

no observations in this math classroom for first semester; therefore, for the combined semesters, second semester stands for the entire year's observation for this class.

Pre-Kindergarten. The data indicated that during the first semester with an n of 328, Pre-Kindergarten teachers taught in light cognitive content in Spanish 77.7% of the time and in dense cognitive content in Spanish 14.7% of the time, and in academic routine in Spanish 7.7%. Teachers were not observed teaching in English. Overall, Pre-Kindergarten teachers were observed teaching 7.0% in academic routines, 79.6% in light cognitive content, and 13.4% in dense cognitive content.

The data indicated that during the second semester with an n of 355, Pre-Kindergarten teachers taught in light cognitive content in Spanish 94.8% of the time, in dense cognitive content 1.4% of the time, in academic routine 3.6% of the time, and in social routine 3.2% of the time. Teachers were not observed teaching in English. Overall, Pre-Kindergarten teachers were observed teaching 3.1% in social routine, .6% in academic routines, 94.9% in light cognitive, and 1.4% in dense cognitive content.

The data indicated that during the combined semesters with an n of 683, Pre-Kindergarten teachers taught in light cognitive content in Spanish 86.9% of the time, in dense cognitive content 7.6%, and in academic routine 3.9%, and in social routine 1.7%. The teachers were not observed teaching in English. Overall, Pre-Kindergarten teachers were observed teaching 1.6% in social routines, 3.7% in academic routines, 87.6% in light cognitive, and 7.2% in dense cognitive content.

Kindergarten. The data indicated that during the first semester with an n of 656, Kindergarten teachers taught in Spanish .4% of the time in social routine, 15.9% in

academic routines, 76.1% in light cognitive content, and in dense cognitive content in Spanish 7.6% of the time. When the teachers were observed teaching in English, they spent 100% of the time teaching in light cognitive content. Overall, Kindergarten teachers were observed teaching .9% social routines, 13% in academic routines, 76.4% in light cognitive content and 9.8% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 562, Kindergarten teachers taught in Spanish, 1.4% in social routine, 13% in academic routine, 76.2% in light cognitive content and 9.4% in dense cognitive content. When the teachers were observed teaching in English, they spent 3.3% of the time teaching in academic routine, 83.3% of the time teaching in light cognitive content, and 13.3% of the time in dense cognitive content. Overall, Kindergarten teachers were observed teaching 1.1% social routines, 10.7% in academic routines, 76.7 % in light cognitive content, and 11.6% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1218, Kindergarten teachers taught in light cognitive content in Spanish .8% of the time in social routines, 14.6% of the time in academic routines, 76.2% in light cognitive content, and 9.9% in dense cognitive content. When the teachers were observed teaching in English, they spent 2.5% of the time teaching in academic routines, 87.6% of the time teaching in light cognitive content, and 9.9% in dense cognitive content. Overall, Kindergarten teachers were observed teaching 1% social routines, 11.9% in academic routines, 76.5% in light cognitive content, and 10.6% in dense cognitive content.

First Grade. The data indicated that during the first semester with an  $n$  of 685, first grade teachers taught in light cognitive content in Spanish .4% of the time in social routines, 15.9% of the time in academic routine, in light cognitive content in Spanish 54.1% of the time, and in dense cognitive content 21.6% in Spanish. When the teachers were observed teaching in English, they spent 56.3% of the time in academic routine, 43.8% of the time teaching in light cognitive content. Overall, first grade teachers were observed teaching 2.5% social routines, 14.9% in academic routines, 52.8% in light cognitive content and 29.8% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 700, first grade teachers taught in dense cognitive content in Spanish 16.2%, light cognitive content in Spanish 65.2% of the time, in social routines in Spanish 6.5%, and in academic routines 12% in Spanish. When the teachers were observed teaching in English, they spent 12.2% of the time teaching in dense cognitive content, 69.4% of the time teaching in light cognitive content and 18.4% of the time teaching in academic routines. Overall, first grade teachers were observed teaching 5.3% social routines, 12.6% in academic routines, 66.7% in light cognitive content, and 15.3% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1385, first grade teachers taught in dense cognitive content in Spanish 18.5% of the time, light cognitive content in Spanish 59.7% of the time, in social routines in Spanish 3.5%, and in academic routines 13.9% in Spanish. When the teachers were observed teaching in English, they spent 20.9% of the time teaching in dense cognitive content, 65.8% of the time teaching in light cognitive content and 23.7% of the time teaching in academic

routines. Overall, first grade teachers were observed teaching 3.9% social routines, 13.7% in academic routines, 59.9% in light cognitive content, and 22.5% in dense cognitive content.

Second grade. The data indicated that during the first semester with an  $n$  of 712, second grade teachers taught in light cognitive content in Spanish 62.7% of the time, in dense cognitive content in Spanish 22.8% of the time, in social routines in Spanish 4%, and in academic routines 10.5% in Spanish. When the teachers were observed teaching in English, they spent 60.8% of the time teaching in light cognitive content, 30.4% of the time teaching dense cognitive content, and 8.8% of the time teaching in academic routines. Overall, second grade teachers were observed teaching 3.7% social routines, 9.4% in academic routines, 63.1% in light cognitive content and 23.9% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 679, second grade teachers taught in dense cognitive content in Spanish 14.2% of the time, in light cognitive content in Spanish 76.3% of the time, and in academic routines 9.5% in Spanish. When the teachers were observed teaching in English, they spent 10% of the time teaching in dense cognitive content, 72.3% of the time teaching in light cognitive content, and 17.7% of the time teaching in academic routines. Overall, second grade teachers were observed teaching 10.5% in academic routines, 73.6% in light cognitive content, and 15.9% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 1391, second grade teachers taught in dense cognitive content in Spanish 18.5% of the time, in light

cognitive content in Spanish 69.5% of the time, in academic routines 10% in Spanish, and in social routines 2%. When the teachers were observed teaching in English, they spent 20.9% of the time teaching in dense cognitive content, 66.2% of the time teaching in light cognitive content, and 12.9% of the time teaching in academic routines. Overall, second grade teachers were observed teaching 1.9 % social routines, 9.9% in academic routines, 68.2% in light cognitive content, and 20% in dense cognitive content.

Third grade. The data indicated that during the first semester with an  $n$  of 390, third grade teachers taught in dense cognitive content in Spanish 15.6% of the time, in light cognitive content in Spanish 83.8% of the time, and in academic routines .6% in Spanish. When the teachers were observed teaching in English, they spent 35% of the time teaching in light cognitive content, 62% of the time teaching dense cognitive content, and 3.1% of the time teaching in academic routines. Overall, third grade teachers were observed teaching 3.8% in academic routines, 54.6% in light cognitive content and 41.5% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 522, third grade teachers taught in dense cognitive content in Spanish 36.9% of the time, in light cognitive content in Spanish 54.5% of the time, and in academic routines 8.6% in Spanish. When the teachers were observed teaching in English, they spent 31.1% of the time teaching in dense cognitive content, 55.2% of the time teaching in light cognitive content, and 13.7% of the time teaching in academic routines. Overall, third grade teachers were observed teaching 10.7% in academic routines, 55.9% in light cognitive content, and 33.3% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 912, third grade teachers taught in dense cognitive content in Spanish 26.7%, in light cognitive content in Spanish 68.6% of the time, and in academic routines 4.7% in Spanish. When the teachers were observed teaching in English, they spent 42.7% of the time teaching in dense cognitive content, 47.6% of the time teaching in light cognitive content, and 9.7% of the time teaching in academic routines. Overall, third grade teachers were observed teaching 7.8% in academic routines, 55.4% in light cognitive content, and 36.8% in light cognitive content.

Fourth grade. The data indicated that during the first semester with  $n$  of 210, fourth grade teachers taught in light cognitive content in Spanish 33.3% of the time and in dense cognitive content in Spanish 64.6% of the time, and 2.1% in academic routine. When the teachers were observed teaching in English, they spent 72.4% of the time teaching in light cognitive content, 24.4% of the time teaching dense cognitive content, and 3.3% in academic routines. Overall, fourth grade teachers were observed teaching 2.9% in academic routines, 54.8% in light cognitive content and 42.2% in dense cognitive content.

The data indicated that during the second semester with an  $n$  of 152, fourth grade teachers taught in light cognitive content in Spanish 12.8% of the time and 82.1% of the time in dense cognitive content, 2.6% in academic routine, and 2.6% in social routine. When the teachers were observed teaching in English, they spent 23.9% of the time teaching in light cognitive content, 72.6% of the time teaching dense cognitive content, and 3.5% of the time teaching in academic routines. Overall, fourth grade teachers were

observed teaching .7% in social routine, 3.3% in academic routines, 21.1% in light cognitive content and 75% in dense cognitive content.

The data indicated that during the combined semesters with an  $n$  of 362, fourth grade teachers taught in light cognitive content in Spanish 24.1% of the time and in dense cognitive content in Spanish 72.4%, in academic routine in Spanish 2.3%, and in social routine in Spanish 1.1%. When the teachers were observed teaching in English, they spent 49.2% of the time teaching in light cognitive content, 72.4 % of the time teaching dense cognitive content, and 3.4% of the time teaching in academic routines. Overall, fourth grade teachers were observed teaching .3% in social routine, 3% in academic routines, 40.6% in light cognitive content, and 56.1% in dense cognitive content.

The most meaningful data resulted in the percentage of time teachers were teaching cognitive content as opposed to having social interactions or routine transitions within the classroom. Those data are depicted in Figure 6.

The data indicated for both semesters in the area of mathematics that teachers were using a significant portion of their time, whether they were teaching in L1 or L2, in teaching cognitively demanding content. Even when few observations accounted for clarifications in language of instruction; i.e., L1-2 or L2-1, up to 100% of those clarifications were in cognitive content instruction.



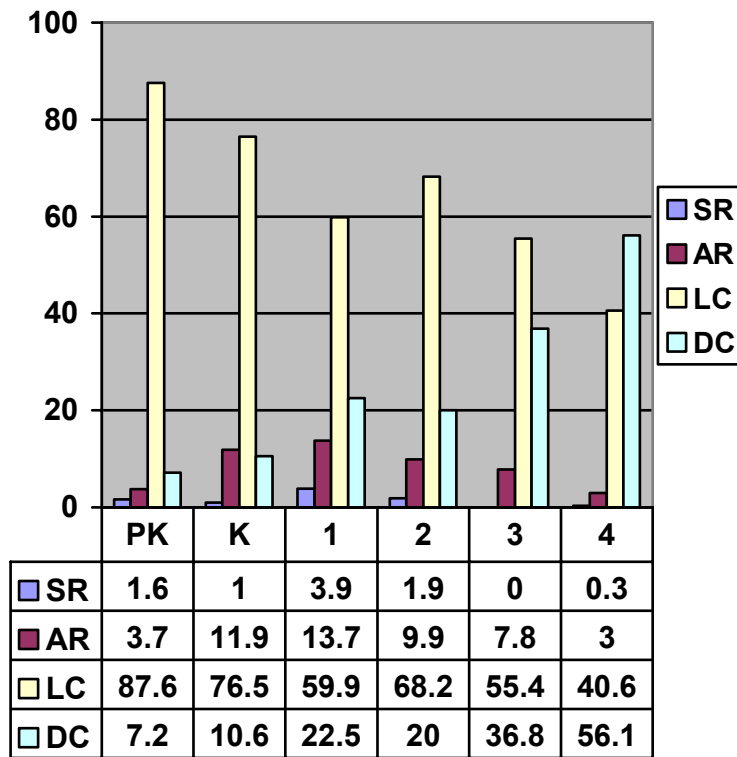


Figure 6. Percentage of Observed Time by Language Content

Also significant to note in the area of mathematics when clarifications were observed, the data indicated that in Pre-Kindergarten or the Pre-Kindergarten/Kindergarten combined, there was only one clarification observed. For example, this is when the teacher used Spanish to introduce English and/or English to clarify Spanish. For Kindergarten there was 1.5% of clarifications observed. For First Grade, there were .7% observations of clarifications of language use. For Second Grade, there were 5.2% observations of clarifications of language use. For Third Grade, there were 3.8% observations of clarifications of language use. For Fourth Grade, there were 3% observations of clarifications of language use. Clarifications appeared to be

maintained across grade levels in mathematics; this is likely due to the subject matter of mathematics in which we assume a more universal numeric language.

Research Question 3: To what extent is the language of instruction used by teachers associated with the elicited student communication mode?

To answer this question, cross-tabulations with frequencies and percentages was the method used to analyze curriculum areas for combined curriculum areas, and subsequent areas of reading, content reading (science and social studies), and mathematics.

For the purposes of discussion, data, as reported in text, are rounded percentages; the tables depict actual percentages. Eighteen different language (communication) modes were observed as elicited from the students by their teachers.

Curriculum Areas: All

During the first semester with an  $n$  of 9540, when L1 was used by the teacher, 64% of the time the following language modes were observed: reading, aural, aural-verbal, and aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time was less but represented by the same modes, with 62.4% of the time, writing, aural, aural-verbal, and aural-reading-verbal observed student communication modes. It appears that when teachers taught in either the native or target language, students were listening the highest percentage of the time. This indicates that teachers were verbal more than the students. Regardless of the language of instruction that teachers were eliciting from students, the largest percentage of the time was spent “listening” (26-30%), with portions of 34-36% of the time in aural-verbal or aural-

reading-verbal, which also indicates a high percentage of listening. In general, during first semester, there appeared to be more “teacher talk” than “student talk.”

During the second semester with an  $n$  of 9339, when L1 was used by the teacher, 76% of the time the following language modes were observed: reading, aural, aural-verbal, and aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time was less but represented by the same modes with 74%, writing, aural, aural-verbal, and aural-reading-verbal observed student communication modes. It appears that when teachers taught in either the native or target language, students were listening the highest percentage of the time. This indicates that teachers were verbal more than the students.

For combined semesters with an  $n$  of 18,867, when L1 was used by the teacher, 92% of the time the following language modes were observed: 5% writing, 4% reading, 32% aural, 3% speaking, 2% reading-writing, 4% reading-verbal, 2% aural-writing, 26% aural-verbal, 2% verbal-aural, 12% aural-reading-verbal. When L2 was the language of instruction by the teacher the following communication modes were observed among students 95% of the time: 7% writing, 7% reading, 31% aural, 2% speaking, 1% writing-aural, 2% reading-writing, 2% reading-verbal, 2% aural-writing, 1% aural-reading, 26% aural-verbal, 2% verbal-aural, and 12% aural-reading-verbal. It appears that when teachers taught in either the native or target language, students were listening the highest percentage of the time. This indicates that teachers were verbal more than the students. Regardless of the language of instruction that teachers were eliciting from students, the students spent the largest percentage of the time “listening.” In general, during the year,

there appeared to be more “teacher talk” than “student talk.” Considering these data represent combined semesters in all curriculum areas, there was a low percentage of reading elicited from the students.

Pre-Kindergarten/Kindergarten. During the first semester with an  $\underline{n}$  of 90, when L1 was used by the teacher, 25% of the time students were observed using the reading mode, 36% aural mode and 32% reading-verbal mode. Teachers did not use the target language during observations. There were no second semester observations

Pre-Kindergarten. During the first semester with an  $\underline{n}$  of 986, when L1 was used by the teacher, 32% of the time the aural language mode was observed and 31% aural-verbal. When L2 was the language of instruction by the teacher, 67% of the time was observed in students’ listening and 41% students were observed using the aural-verbal mode.

During the second semester with an  $\underline{n}$  of 991, when L1 was used by the teacher, 35% of the time the aural language mode was observed, 30% aural-verbal, and 17% aural-reading-verbal. When L2 was the language of instruction by the teacher, the communication mode was verbal with 100% of the students using this mode (only 9 observations).

For the combined semesters with an  $\underline{n}$  of 1977, when L1 was used by the teacher, 33% of the time the aural language mode was observed, 30% aural-verbal, and 17% aural-reading-verbal. When L2 was the language of instruction by the teacher, the communication mode was 17% aural and 75% verbal.

Kindergarten. During the first semester with an  $\underline{n}$  of 1860 when L1 was used by the teacher, 25% of the time the language mode of aural was observed, 25% aural-verbal, and 13% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 25% aural, 29% speaking, and 41% aural-verbal.

During the second semester with an  $\underline{n}$  of 1975 when L1 was used by the teacher, 36% of the time the language mode of aural was observed. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes was 30% aural. Other modes were small percentages. The majority of the time was spent in aural (listening) mode elicited from the students.

During the combined semesters with an  $\underline{n}$  of 3835 when L1 was used by the teacher, 31% of the time the language mode of aural was observed, 25% aural-verbal was observed, and 10% aural-reading-verbal was observed. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 27% aural, 19% speaking, and 36% in aural-verbal.

First grade. During the first semester with an  $\underline{n}$  of 2233 when L1 was used by the teacher, 33% of the time the language mode of aural was observed, 23% aural-verbal, and 10% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 12% reading, 32% aural, and 19% aural-verbal.

During the second semester with an  $\underline{n}$  of 2060 when L1 was used by the teacher, 36% of the time the language mode of aural was observed and 16% in the aural-reading-

verbal mode. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 37% aural and 31% aural-verbal.

During the combined semesters with an  $n$  of 4279 when L1 was used by the teacher, 35% of the time the language mode of aural was observed, 26% aural-verbal, and 13% in the aural-reading-verbal mode. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 11% reading, 34% aural, and 24% aural-verbal.

Second grade. During the first semester with an  $n$  of 2142 when L1 was used by the teacher, 30% of the time the language mode of aural was observed, 20% aural-verbal, and 11% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 11% writing, 10% reading, 28% aural, and 29% aural-verbal.

During the second semester with an  $n$  of 2183 when L1 was used by the teacher, 31% of the time the language mode of aural was observed from students and 11% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 36% aural and 11% aural-reading-verbal.

During the combined semesters with an  $n$  of 4318 when L1 was used by the teacher, 31% of the time the language mode of aural was observed from students, 26% aural-verbal, and 11% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 32% aural, 30% aural-verbal, and 9% aural-reading-verbal.

Third grade. During the first semester with an  $\underline{n}$  of 1429 when L1 was used by the teacher, 10% of the time the language mode of reading was observed, 32% aural, 17% aural-verbal, and 15% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 18% writing, 6% reading, 20% aural, 26% aural-verbal, and 12% aural-reading-verbal.

During the second semester with an  $\underline{n}$  of 1500 when L1 was used by the teacher, 33% of the time the language mode of aural was observed among students, 29% aural-verbal, and 20% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 37% aural, 23% aural-verbal, and 9% aural-reading-verbal.

During the combined semesters with an  $\underline{n}$  of 2929 when L1 was used by the teacher, 32% of the time the language mode of aural was observed among students, 23% aural-verbal, and 17% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 13% writing, 19% aural, 25% aural-verbal, and 10% aural-reading-verbal.

Fourth grade. During the first semester with an  $\underline{n}$  of 810 when L1 was used by the teacher, 16% of the time the language mode of reading was observed, 21% aural, 12% aural-verbal, and 27% in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 30% aural, 7% reading, 11% aural-verbal, and 30% aural-reading-verbal.

During the second semester with an  $\underline{n}$  of 630 when L1 was used by the teacher, 43% of the time the language mode of aural was observed and 40% aural-verbal. When

L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 12% reading, 34% aural, 29% aural-verbal, and 16% aural-reading-verbal.

During the combined semesters with an  $n$  of 1440 when L1 was used by the teacher, 13% of the time the language mode of reading was observed, 26% aural, 18% aural-verbal, and 22% aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 9% reading, 32% aural, 20% aural-verbal, and 23% aural-reading-verbal.

Main communication modes by language of instruction. During combined semesters, students were observed writing 44% of the time during L1 instruction, 17% of the time during L2 instruction, 1% of the time during clarification of L1 introducing L2, 1% of the time during clarification of L2 clarified by L1, and .5% of the time during the time the teacher was silent. Students were observed reading 48% of the time during L1 instruction, 25% of the time during L2 instruction, 0% of the time during clarification of L1 introducing L2, .2% of the time during clarification of L2 clarified by L1, and 24% of the time during the time the teacher was silent. Students were observed listening 74% of the time during L1 instruction, 21% of the time during L2 instruction, 2% of the time during clarification of L1 introducing L2, 2 % of the time during clarification of L2 clarified by L1, and .5% of the time during the time the teacher was silent. Students were observed speaking 74% of the time during L1 instruction, 19% of the time during L2 instruction, 5% of the time during clarification of L1 introducing L2, 2 % of the time



during clarification of L2 clarified by L1, and .2% of the time during the time the teacher was silent.

#### Curriculum Area: Reading

Pre-Kindergarten/Kindergarten. During the first semester with an  $\underline{n}$  of 29 observations in this one Pre-K/K, when L1 was used by the teacher, 72% of the time students were observed using the reading mode and 28% aural mode. The teacher did not use the target language during observations. There were no second semester observations.

Pre-Kindergarten. During the first semester with an  $\underline{n}$  of 319 observations, when L1 was used by the teacher, 35% of the time the aural language mode was observed and 32% aural-verbal. When L2 was the language of instruction by the teacher, 100% of the time was observed in students' listening, with only two observations. During the second semester with an  $\underline{n}$  of 300 observations, when L1 was used by the teacher, the aural language mode was observed 30% of the time, 36% aural-verbal, and 18% of the time students were observed not using any language mode. L2 was not observed during second semester in Pre-Kindergarten in reading. For the combined semesters with an  $\underline{n}$  of 619 observations when L1 was used by the teacher, 33% of the time the aural language mode was observed, 34% aural-verbal, and 10% aural-reading-verbal. When L2 was the language of instruction by the teacher, the communication mode was 100% aural with only two observations at Pre-Kindergarten in reading in L2.

Kindergarten. During the first semester with an  $\underline{n}$  of 613 observations, when L1 was used by the teacher, 23% of the time the language mode of aural (132 observations) was observed, 22% aural-verbal (128 observations), and 16% in aural-reading-verbal (93

observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 73% aural (only 11 observations) and 20% aural-verbal (only 3 observations).

During the second semester with an  $\underline{n}$  of 652 observations, when L1 was used by the teacher, 33% of the time the language mode of aural was observed (160 observations), 18% in reading-verbal with 86 observations, 18% in aural-verbal with 87 observations and 12% (57 observations) in aural-reading-verbal. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 55% aural (16 observations), 28% in aural-verbal with 8 observations, and 17% (5 observations) in non-language activity. Other modes were small percentages (less than 10%). The majority of the time was spent in aural (listening) mode elicited from the students.

During the combined semesters with an  $\underline{n}$  of 1265 observations, when L1 was used by the teacher, 28% of the time the language mode of aural was observed (292 observations), 10% reading-verbal (108 observations), 20% aural-verbal was observed (215 observations), and 14% aural-reading-verbal was observed (150 observations). When L2 was the language of instruction by the teacher the percentage of time observed in communication modes were 61% aural (27 observations) and 25% in aural-verbal (11 observations).

First grade. During the first semester with an  $\underline{n}$  of 839 observations, when L1 was used by the teacher, 32% of the time the language mode of aural was observed (216 observations), 22% aural-verbal (148 observations), and 10% in aural-reading-verbal (65

observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 20% aural (13 observations), 19% reading-aural (12 observations), 29% aural-reading (19 observations) and 12% aural-verbal (8 observations).

During the second semester with an  $\underline{n}$  of 675 observations, when L1 was used by the teacher, 31% of the time the language mode of aural was observed (157 observations) and 29% in the aural-verbal mode (150 observations), and 17% aural-reading-verbal (88 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 45% aural (26 observations) and 33% aural-verbal (19 observations).

During the combined semesters with an  $\underline{n}$  of 1514 observations, when L1 was used by the teacher, 31% of the time the language mode of aural was observed (373 observations), 25% aural-verbal (298 observations), and 13% in the aural-reading-verbal (153 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 32% aural (39 observations), 10% reading-aural (12 observations), 15% aural-reading (19 observations), and 22% aural-verbal (27 observations).

Second grade. During the first semester with an  $\underline{n}$  of 703 observations, when L1 was used by the teacher, 10% of the time the language mode of writing was observed (50 observations), 24% aural (119 observations), 20% aural-verbal (98 observations) and 14% in aural-reading-verbal (70 observations). When L2 was the language of instruction by the teacher the percentage of time observed in communication modes were 12%

reading (18 observations), 32% aural (50 observations), 11% in reading-writing-aural (17 observations) and 27% aural-verbal (42 observations).

During the second semester with an  $\underline{n}$  of 801 observations, when L1 was used by the teacher, the language mode of aural was observed from students 27% of the time (114 observations), 32% aural-verbal (139 observations), and 13% in aural-reading-verbal (54 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 37% aural (63 observations), 10% reading-verbal (17 observations), and 34% aural-verbal (57 observations).

During the combined semesters with an  $\underline{n}$  of 1504 observations, when L1 was used by the teacher, the language mode of aural was observed from students 25% of the time (233 observations), 26% aural-verbal (237 observations), and 14% in aural-reading-verbal (124 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 35% aural (113 observations) and 30% aural-verbal (99 observations).

Third grade. During the first semester with an  $\underline{n}$  of 500 observations, when L1 was used by the teacher, 18% of the time the language mode of reading was observed (45 observations), 34% aural (86 observations), 18% aural-verbal (47 observations), and 11% in aural-reading-verbal (28 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 25% writing (48 observations), 18% reading (35 observations), 15% aural (30 observations) and 21% aural-verbal (41 observations).

During the second semester with an  $\underline{n}$  of 563 observations, when L1 was used by the teacher, 36% of the time the language mode of aural was observed among students (66 observations), 10% reading-verbal (18 observations), 10% aural-verbal (19 observations), and 32% in aural-reading-verbal (59 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 31% aural (72 observations) and 21% aural-verbal (49 observations).

During the combined semesters with an  $\underline{n}$  of 1063 observations, when L1 was used by the teacher, the language mode of reading was observed among students 11% of the time with 50 observations, the language mode of aural was observed among students 34% of the time (152 observations), 15% aural-verbal (66 observations), and 20% in aural-reading-verbal (87 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 16% writing (69 observations), 13% reading (56 observations), 24% aural (102 observations), and 21% aural-verbal (90 observations).

Fourth grade. During the first semester with an  $\underline{n}$  of 471 when L1 was used by the teacher, 13% of the time the language mode of reading was observed (27 observations), 21% aural (43 observations), and 26% in aural-reading-verbal (53 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 31% aural (53 observations), 12% reading (21 observations), 18% aural-verbal (32 observations), and 27% aural-reading-verbal (47 observations).

During the second semester with an  $\underline{n}$  of 210 when L1 was used by the teacher, the language mode of aural was observed 100% of the time (only 3 observations). When

L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 44% aural (56 observations), and 38% aural-verbal (48 observations).

During the combined semesters with an  $\bar{n}$  of 681 observations, when L1 was used by the teacher, 13% of the time the language mode of reading was observed (27 observations), 22% aural (46 observations), and 26% aural-reading-verbal (53 observations). When L2 was the language of instruction by the teacher the percentage of time observed in communication modes were 36% aural (109 observations), 27% aural-verbal (80 observations), and 18% aural-reading-verbal (55 observations).

Main communication modes (reading, writing, listening, and speaking) by language of instruction (L1 and L2). During combined semesters with an  $\bar{n}$  of 6675 observations for all grade levels, students were observed writing 58% of the time (261 observations) during L1 instruction and 17% of the time (75 observations) during L2 instruction. Students were observed reading 47% of the time during L1 instruction (245 observations) and 21% of the time reading during L2 instruction (110 observations). Students were observed listening 74% of the time during L1 instruction (1293 observations) and 22% of the time during L2 instruction (392 observations). Students were observed speaking 65% of the time during L1 instruction (80 observations) and 19% of the time during L2 instruction (26 observations).

Curriculum Area: Content Area Reading (Science/Social Studies)

Pre-Kindergarten/Kindergarten. During the first semester with an  $\bar{n}$  of 30 observations in one Pre-K/K classroom, when L1 was used by the teacher, students were

observed using the aural mode 13% of the time (2 observations), 80% in reading-verbal (12 observations). When the teacher was silent, the students were observed on 15 observational counts to be using the reading-verbal language mode (100%). The teacher did not use the target language during observations. There were no second semester observations.

Pre-Kindergarten. During the first semester with an  $\underline{n}$  of 297 observations, when L1 was used by the teacher, the aural language mode was observed 29% of the time (78 observations) and 28% aural-verbal (75 observations). L2 was not observed being used during first semester. When the teacher was silent, the students were observed on 25 counts to be using the aural-verbal communication mode among them. During the second semester with an  $\underline{n}$  of 329 observations, when L1 was used by the teacher, the aural language mode was observed 43% of the time (114 observations), 31% aural-verbal (82 observations), and students were observed 15% of the time in the aural-reading-verbal language mode (39 observations). Only nine observations were taken during the teachers' use of L2 and those were in the area of students speaking. For the combined semesters with an  $\underline{n}$  of 626 observations, when L1 was used by the teacher, the aural language mode was observed 36% of the time (192 observations), 29% aural-verbal (157 observations), and 10% aural-reading-verbal (53 observations). When L2 was the language of instruction by the teacher, the communication mode was 100% aural with only nine observations at Pre-Kindergarten in content area reading.

Kindergarten. During the first semester with an  $\underline{n}$  of 588 observations, when L1 was used by the teacher, the language mode of aural 27% of the time (147 observations)

was observed, 28% aural-verbal (148 observations), and 16% in aural-reading-verbal (84 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 40% reading-verbal (only 4 observations) and 60% aural-verbal (only 6 observations).

During the second semester with an  $\underline{n}$  of 644 observations, when L1 was used by the teacher, 40% of the time the language mode of aural was observed (216 observations) and 26% in aural-verbal with 143 observations. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 19% aural (6 observations), 16% in verbal with five observations, 63% aural-verbal with 20 observations. Other modes were small percentages (less than 10%). The majority of the time was spent in aural (listening) mode elicited from the students.

During the combined semesters with an  $\underline{n}$  of 1232 observations, when L1 was used by the teacher, the language mode of aural was observed 34% of the time (363 observations), 27% aural-verbal (291 observations), and 11% aural-reading-verbal was observed (121 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 14% aural (six observations), 12% verbal (five observations), 10% reading-verbal (four observations), and 62% in aural-verbal (26 observations).

First grade. During the first semester with an  $\underline{n}$  of 590 observations, when L1 was used by the teacher, the language mode of aural was observed 37% of the time (185 observations), 27% aural-verbal (134 observations), and 14% in aural-reading-verbal (68 observations). When L2 was the language of instruction by the teacher, the percentage of



time observed in communication modes were 42% reading (13 observations), 19% aural (six observations), and 32% aural-reading-verbal (10 observations).

During the second semester, with an  $\underline{n}$  of 666 observations, when L1 was used by the teacher, the language mode of aural was observed 41% of the time (183 observations) and 24% in the aural-verbal mode (109 observations), and 15% aural-reading-verbal (67 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 16% reading (14 observations), 35% aural (31 observations), 11% reading-verbal (10 observations), 32% aural-verbal (28 observations).

During the combined semesters with an  $\underline{n}$  of 1256 observations, when L1 was used by the teacher, the language mode of aural was observed 39% of the time (368 observations), 26% aural-verbal (243 observations), and 14% in the aural-reading-verbal (135 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 23% reading (27 observations), 31% aural (37 observations), and 25% aural-reading (30 observations).

Second grade. During the first semester with an  $\underline{n}$  of 623 observations, when L1 was used by the teacher, the language mode of writing was observed 11% of the time (41 observations), 34% aural (127 observations), and 19% aural-verbal (69 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 12% writing (22 observations), 29% aural (55 observations), and 39% aural-verbal (75 observations).

During the second semester with an  $n$  of 628 observations, when L1 was used by the teacher, the language mode of aural was observed from students 30% of the time (96 observations), 28% aural-verbal (90 observations), and 13% in aural-reading-verbal (40 observations). When L2 was the language of instruction by the teacher the percentage of time observed in communication modes were 38% aural (64 observations), 24% aural-verbal (40 observations), and 18% aural-reading-verbal (30 observations).

During the combined semesters with an  $n$  of 1251 observations, when L1 was used by the teacher, the language mode of aural was observed from students 32% of the time (223 observations), 23% aural-verbal (159 observations), and 11% in aural-reading-verbal (73 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 33% aural (119 observations), 32% aural-verbal (115 observations), and 12% aural-reading-verbal (44 observations).

Third grade. During the first semester with an  $n$  of 216 observations, when L1 was used by the teacher, the language mode of writing was observed 20% of the time (18 observations), 26% aural (24 observations), 21% aural-verbal (19 observations), and 23% in aural-reading-verbal (21 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 23% writing (33 observations), 15% aural (21 observations), 35% aural-verbal (51 observations), and 11% aural-reading-verbal (17 observations).

During the second semester with an  $n$  of 316 observations, when L1 was used by the teacher, the language mode of aural was observed among students 37% of the time

(53 observations), 36% aural-verbal (52 observations), and 15% in aural-reading-verbal (22 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 35% aural (80 observations) and 21% aural-verbal (48 observations).

During the combined semesters with an  $\underline{n}$  of 706 observations, when L1 was used by the teacher, the language mode of aural was observed among students 33% of the time (77 observations), the language mode of aural-verbal was observed among students 30% of the time (71 observations), 18% in aural-reading-verbal (43 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 50% writing (56 observations), 27% aural (101 observations), and 27% aural-verbal (99 observations).

Fourth grade. During the first semester with an  $\underline{n}$  of 149 when L1 was used by the teacher, the language mode of reading was observed 47% of the time (15 observations), 43% in aural-reading-verbal (14 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 27% aural (26 observations) and 38% aural-reading-verbal (36 observations).

During the second semester with an  $\underline{n}$  of 210 when L1 was used by the teacher, the language mode of aural was observed 60% of the time (21 observations) and 40% aural-verbal (14 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 23% reading (29 observations), 43% aural (54 observations), and 11% aural-verbal (13 observations).

During the combined semesters with an  $n$  of 359 observations, when L1 was used by the teacher, the language mode of reading was observed 22% of the time (15 observations), 34% aural (23 observations), 22% aural-verbal (15 observations), and 21% aural-reading-verbal (14 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 15% reading (33 observations), 36% aural (80 observations), and 24% aural-reading-verbal (53 observations).

Main communication modes (reading, writing, listening, and speaking) by language of instruction (L1 and L2). During combined semesters with an  $n$  of 5460 observations for all grade levels in the content reading areas of science and social studies, students were observed writing 40% of the time (164 observations) during L1 instruction and 21% of the time (88 observations) during L2 instruction. Students were observed reading 54% of the time during L1 instruction (132 observations) and 32% of the time reading during L2 instruction (79 observations). Students were observed listening 74% of the time during L1 instruction (1248 observations) and 22% of the time during L2 instruction (343 observations). Students were observed speaking 85% of the time during L1 instruction (119 observations) and 13% of the time during L2 instruction (18 observations).

#### Curriculum Area: Mathematics

Pre-Kindergarten/Kindergarten. During the first semester, this classroom was not observed in the area of mathematics. During second semester with an  $n$  of 30 observations in the Pre-K/K classroom, when L1 was used by the teacher, 57% of the time students were observed using the aural mode (17 observations), 37% in reading-

verbal with 11 observations. No other language of instruction was observed during mathematics.

Pre-Kindergarten. During the first semester with an  $\underline{n}$  of 328 observations, when L1 was used by the teacher, the aural language mode was observed 32% of the time (97 observations), 25% aural-verbal (76 observations), 20% aural-reading-verbal (61 observations), and 10% non-language activity (31 observations). L2 was not observed being used during first semester. When the teacher was silent, the students were observed on 54% of the time writing (15 observations), 18% of the time in writing-verbal communication (5 observations), 18% in aural-reading-verbal among themselves (5 observations), and 11% of the time in non-language activity (3 observations).

During the second semester with an  $\underline{n}$  of 355 observations, when L1 was used by the teacher, the aural language mode was observed 30% of the time (106 observations), 11% verbal (37 observations), and 33% aural-verbal (114 observations). No observations were taken during the teachers' use of L2. For the combined semesters with an  $\underline{n}$  of 683 observations, when L1 was used by the teacher, the aural language mode was observed 31% of the time (203 observations), 29% aural-verbal (190 observations), and 13% aural-reading-verbal (87 observations). No teacher was observed during mathematics using L2 language of instruction.

Kindergarten. During the first semester with an  $\underline{n}$  of 656 observations, when L1 was used by the teacher, the language mode of aural was observed 35% of the time (190 observations) and 32% aural-verbal (170 observations). When L2 was the language of

instruction by the teacher, the percentages of time observed in communication modes were 23% aural (seven observations), 77% non-language activity (24 observations).

During the second semester with an  $\underline{n}$  of 563 observations, when L1 was used by the teacher, the language mode of writing was observed 11% of the time (46 observations), the language mode of aural was observed 23% of the time (95 observations), 12% of the time in aural-writing (49 observations), and 29% in aural-verbal with 122 observations. When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 22% aural (20 observations), 39% in verbal with 35 observations, and 39% aural-verbal with 35 observations. Other modes were small percentages (less than 10%). The majority of the time was spent in aural (listening) mode elicited from the students.

During the combined semesters with an  $\underline{n}$  of 1219 observations, when L1 was used by the teacher, the language mode of aural was observed 30% of the time (285 observations) and 31% aural-verbal (292 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 22% aural (27 observations), 29% verbal (35 observations), 29% in aural-verbal (35 observations).

First grade. During the first semester with an  $\underline{n}$  of 685 observations, when L1 was used by the teacher, 36% of the time the language mode of aural was observed (201 observations), 31% aural-verbal (174 observations), and 15% in aural-reading-verbal (84 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 25% aural (four observations), 31%

aural-verbal (five observations), 31% aural-reading-verbal (five observations), and 13% non-language activity (two observations).

During the second semester with an  $\underline{n}$  of 701 observations, when L1 was used by the teacher, the language mode of aural was observed 34% of the time (195 observations) and 24% in the aural-verbal mode (138 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 45% aural (44 observations), 29% aural-verbal (28 observations), and 17% verbal-reading (17 observations).

During the combined semesters with an  $\underline{n}$  of 1386 observations, when L1 was used by the teacher, 35% of the time the language mode of aural was observed (396 observations), 28% aural-verbal (312 observations), and 12% in the aural-reading-verbal (136 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 42% aural (48 observations), 29% aural-reading (33 observations), and 15% verbal-reading (17 observations).

Second grade. During the first semester with an  $\underline{n}$  of 713 observations, when L1 was used by the teacher, 35% of the time the language mode of aural (152 observations) and 37% aural-verbal (158 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 36% aural (53 observations), 36% aural-verbal (53 observations), and 13% aural-reading-verbal (20 observations).

During the second semester with an  $\underline{n}$  of 680 observations, when L1 was used by the teacher, 36% of the time the language mode of aural was observed from students (156

observations), 26% aural-verbal (111 observations), and 10% in aural-reading-verbal (44 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 20% writing (26 observations), 22% reading (28 observations), 21% aural (27 observations), and 19% aural-verbal (25 observations).

During the combined semesters with an  $\underline{n}$  of 1393 observations, when L1 was used by the teacher, the language mode of aural was observed from students 36% of the time (308 observations), 31% aural-verbal (269 observations), and 10% in aural-reading-verbal (83 observations). When L2 was the language of instruction by the teacher, the percentages of time observed in communication modes were 11% writing (30 observations), 12% reading (32 observations), 29% aural (80 observations), 28% aural-verbal (78 observations), and 10% aural-reading-verbal (29 observations).

Third grade. During the first semester with an  $\underline{n}$  of 390 observations, when L1 was used by the teacher, the language mode of writing was observed 12% of the time (20 observations), 28% aural (49 observations), 41% aural-verbal (71 observations), and 12% in aural-reading-verbal (21 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 38% aural (62 observations), 31% aural-verbal (50 observations), and 19% aural-reading-verbal (31 observations).

During the second semester with an  $\underline{n}$  of 522 observations, when L1 was used by the teacher, 13% of the time the language mode of writing was observed among students (24 observations), the language mode of aural was observed among students 37% of the



time (69 observations), 10% aural-writing (19 observations), 13% aural-verbal (27 observations), and 17% in aural-reading-verbal (31 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 13% writing (34 observations), 26% aural (71 observations), 21% aural-verbal (56 observations), and 19% aural-reading-verbal (51 observations).

During the combined semesters with an  $n$  of 912 observations, when L1 was used by the teacher, the language mode of writing was observed among students 12% of the time with 44 observations, 33% aural (118 observations), the language mode of aural-verbal was observed among students 27% of the time (98 observations), and 14% in aural-reading-verbal (52 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 10% writing (43 observations), 31% aural (133 observations), 25% aural-verbal (106 observations), and 19% aural-reading-verbal (82 observations).

Fourth grade. During the first semester with an  $n$  of 210 when L1 was used by the teacher, the language mode of aural was observed 27% of the time (13 observations), 15% reading-verbal (7 observations), and 42% aural-verbal (20 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 11% reading (14 observations), 15% aural (18 observations), 37% aural-verbal (46 observations), and 29% aural-reading-verbal (36 observations).

During the second semester with an  $n$  of 152 when L1 was used by the teacher, 10% reading (4 observations), 13% writing-reading (5 observations), 23% aural-verbal (9 observations), and 39% aural-reading-verbal (15 observations). When L2 was the

language of instruction by the teacher, the percentage of time observed in communication modes were 22% writing (25 observations), 33% aural (37 observations), and 28% aural-reading-verbal (32 observations).

During the combined semesters with an  $n$  of 362 observations, when L1 was used by the teacher, the language mode of aural was observed 17% of the time (15 observations), 33% aural-verbal (29 observations), and 22% aural-reading-verbal (19 observations). When L2 was the language of instruction by the teacher, the percentage of time observed in communication modes were 11% writing (25 observations), 23% aural (55 observations), 22% aural-verbal (52 observations), and 29% aural-reading-verbal (68 observations).

Main communication modes (reading, writing, listening, and speaking) by language of instruction (L1 and L2). During combined semesters with an  $n$  of 5985 observations for all grade levels in mathematics, students were observed writing 38% of the time (236 observations) during L1 instruction and 16% of the time (98 observations) during L2 instruction. Students were observed reading 54% of the time (102 observations) during L1 instruction, and 30% of the time reading (56 observations) during L2 instruction. Students were observed listening 76% of the time (1342 observations) during L1 instruction, and 20% of the time (343 observations) during L2 instruction. Students were observed speaking 74% of the time (127 observations) during L1 instruction, and 26% of the time during L2 instruction (44 observations).

Research Question 4: To what extent does each level of language content associated with each activity structure?

For this research question, a cross-tabulations analysis was the procedure used for calculating frequencies and percentages for the four types of language content by the 21 activity structure, first for all curriculum areas and all grade levels, PK-4, then for three curriculum areas by grade level. The purpose was to determine the type of activity structure that occurs within each type of language content. For the purposes of discussion, data, as reported in text, are rounded percentages; the tables depict actual percentages. The results for this question are reported for all grade levels and all curriculum areas observed with 18,830 observations.

All Curriculum Areas: Language Content: Social Routine

Within the Language Content of Social Routine, there were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Ask/Answer (8%; 32 observations), (b) Observation/Performance (23%; 81 observations), (c) Non-Academic Feedback (13%; 46 observations); and (d) Non-Academic Interruption (15%; 53 observations).

In Social Routines used by teachers and students, language is non-academic. Social Routines develop social language through conversational style. The Activity Structures observed during Social Routines are logical in that teachers may ask a question, such as, “How are you today?” with students answering, “Fine, thanks.” Teachers may simply be observing students in their own personal conversations or social activities. They may also provide corrective feedback during recess or during non-

academic activities. Students may interrupt the teacher, or someone else may interrupt instruction, during which time students may engage in social language.

#### All Curriculum Areas: Academic Routines

Within the Language Content of Academic Routine, there were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (51%; 1084 observations), (b) Leading/Performing (14%; 300 observations), (c) Directing/Performing (8%; 174 observations), and (d) Non-Academic Transition (5%; 107 observations).

In Academic Routines used by teachers and students, language is non-academic. Academic Routines develop social/school language through regular classroom activity. The Activity Structures observed during Academic Routines are logical in that teachers may lecture or make statements as students listen, such as, “You may line up for lunch now.” with students listening. Teachers may lead or direct the students to line up for lunch with students performing. Additionally, transitions from one subject to another subject or from activity to activity would be counted as an Academic Routine.

#### All Curriculum Areas: Light Cognitive Content

Within the Language Content of Light Cognitive Content, there were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Ask/Answer (27%; 3377 observations), (b) Lecture/Listen (18%; 2290 observations), (c) Observe/Perform (16%; 1975 observations), (d) Direct/Perform (11%; 1372 observations), (e) Demonstrate/Listen (10%; 1199 observations), and (f) Lead/Perform (8%; 1067 observations).

### All Curriculum Areas: Dense Cognitive Content

Within the Language Content of Dense Cognitive Content, there were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Ask/Answer (43%; 1611 observations), (b) Observe/Perform (16%; 583 observations), (c) Direct/Perform (10%; 353 observations), (d) Demonstrate/Listen (9%; 338 observations), (e) Lecture/Listen (8%; 292 observations), and (f) Lead/Perform (6%; 222 observations).

### Reading by Grade Level

In the reading curriculum area first semester, there were a total of 3,471 observations, second semester 3,178, and combined semesters, 6,649.

Pre-Kindergarten-Kindergarten. There were a total of 30 observations during first semester. There were no observations second semester. Within the Language Content of Social and Academic Routines and in Dense Cognitive Content, there were no observations of activity.

Within the Language Content of Light Cognitive Content, there were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 6 observations), (b) Directing/Performing (38%; 11 observations), (c) Leading/Performing (28%; 8 observations), and (d) Observing/Performing (13%; 4 observations).

Pre-Kindergarten. The total number of observations in Pre-Kindergarten was 319 in activity structures for first semester, 300 for second semester, and 619 for combined semesters.

For first and second semesters, no Social Routines were observed. For first semester within the Language Content of Academic Routine, 20 observations of Activity Structures were observed or 6% within this area of Language Content, while in the second semester there were 6 observations (2% of the total Language Content). In the first semester, there were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (55%; 11 observations), (b) Demonstrate/Listen (30%; 6 observations), and (c) Ask/Answer (10%; 2 observations). Combined semesters varied little from the first semester. Combined semesters yielded a total of 26 (4%) observations. The predominate Activity Structures were: (a) Lecture/Listen (54%; 14 observations), (b) Demonstrate/Listen (23%; 6 observations), and (c) Ask/Answer (12%; 3 observations).

For first semester within the Language Content of Light Cognitive Content (292; 92% observations of Activity Structures), there were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (20%; 58 observations), (b) Demonstrate/Listen (11%; 31 observations), (c) Lead/Perform (22%; 65 observations), and (d) Ask/Answer (34%; 100 observations). For second semester (225, 75%) within the Language Content area of Light Cognitive Content, there were five notable Activity Structures used predominately by teachers: (a) Lecture/Listen (22%; 50 observations), (b) Direct/Perform (13%; 29 observations), (c) Demonstrate/Listen (12%;

27 observations), (d) Ask/Answer (28%; 64 observations), and (e) Observe/Perform (16%; 35 observations). For combined semesters (517, 84%) within the Language Content area of Light Cognitive Content, there were six notable Activity Structures used predominately by teachers: (a) Lecture/Listen (21%; 108 observations), (b) Direct/Perform (7%; 34 observations), (c) Demonstrate/Listen (11%; 58 observations), (d) Lead/Perform (14%; 74 observations), (e) Ask/Answer (23%; 209 observations), and (f) Observe/Perform (11%; 94 observations).

First semester, only seven observations were observed in Dense Cognitive Content. Second semester, there were 69 observations (23%). The most relevant were: (a) Lead/Perform (23%; 16 observations), (b) Ask/Perform (10%; 7 observations), and (c) Ask/Answer (55%; 38 observations). For combined semesters, there were 76 observations (12%). The most relevant were: (a) Lead/Perform (24%; 18 observations), and (b) Ask/Answer (50%; 38 observations).

Kindergarten. The total number of observations for first semester in Kindergarten was 613 in activity structures, while second semester there were 653, and 1266 for combined semesters.

First semester, in the Language Content of Social Routines only 20 (3%) observations in Activity Structures were observed. In the second semester, no Social Routines were observed. In the first semester within the Language Content of Academic Routine, 93 observations of Activity Structures were observed (15% within this area of Language Content). There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (46%; 43 observations) and (b) Ask/Answer

(20%; 19 observations). Second semester, within the Language Content of Academic Routine, 98 observations of Activity Structures were observed (15% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (51%; 50 observations), (b) Direct/Perform (22%; 22 observations), (c) Lead/Perform (9%; 9 observations), and (d) Ask/Answer (8%; 8 observations). For combined semesters, within the Language Content of Academic Routine, 191 observations of Activity Structures were observed (15% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (49%; 93 observations), (b) Direct/Perform (13%; 25 observations), and (c) Ask/Answer (14%; 27 observations).

First semester, within the Language Content of Light Cognitive Content, 452 observations of Activity Structures were observed (74% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (10%; 44 observations), (b) Direct/Perform (15%; 66 observations), (c) Demonstrate/Listen (12%; 54 observations), (d) Lead/Perform (16%; 73 observations), and (e) Ask/Answer (26%; 119 observations).

Second semester, within the Language Content of Light Cognitive Content, 440 observations of Activity Structures were observed (67% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (17%; 73 observations), (b) Direct/Perform (19%; 83 observations), (c) Lead/Perform (16%; 72 observations), (d) Ask/Answer (21%; 90 observations), and (e) Observe/Perform (13%; 59 observations). For combined



semesters, within the Language Content of Light Cognitive Content, 892 observations of Activity Structures were observed (71% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (13%; 117 observations), (b) Direct/Perform (17%; 149 observations), (c) Demonstrate/Listen (10%; 91 observations), (d) Lead/Perform (16%; 145 observations), (e) Ask/Answer (23%; 209 observations), and (f) Observe/Perform (11%; 94 observations).

Within the Language Content of Dense Cognitive Content, there were only 48 (8%) observations of Activity Structures for first semester. The most noteworthy were in two Activity Structures: (a) Lead/Perform (38%; 18 observations) and (b) Ask/Answer (52%; 25 observations). For second semester, within the Language Content of Dense Cognitive Content, there were only 99 (15%) observations of Activity Structures. The most noteworthy were in two Activity Structures: (a) Direct/Perform (38%; 38 observations) and (b) Ask/Answer (48%; 47 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 147 (12%) observations of Activity Structures for first semester. The most noteworthy were in three Activity Structures: (a) Direct/Perform (27%; 40 observations), (b) Lead/Perform (12%; 18 observations), and (c) Ask/Answer (49%; 72 observations).

First Grade. The total number of observations for first semester in first grade was 835 in activity structures; for second semester in first grade there were 675 observations in activity structures and 1510 for the combined semesters.

In the Language Content of Social Routines, only 22 (3%) observations in Activity Structures were observed; all were in non-academic activity – feedback (8 observations; 36%), free time (6 observations; 27%), transition (2 observations; 9%), and interaction (3 observations, 14%). For second semester, there were only two observations in Ask/Answer. For combined semesters, there were 24 (2%) observations in the following Activity Structures: (a) feedback (8 observations; 33%), (b) free time (6 observations; 25%), (c) transition (2 observations; 8%), and (d) interaction (3 observations, 13%).

First semester, within the Language Content of Academic Routine, 135 observations of Activity Structures were observed (16% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 77 observations), (b) Direct/Listen (10%; 14 observations), and (c) Non-Academic Free time (16%; 21 observations). For second semester, within the Language Content of Academic Routine, 118 observations of Activity Structures were observed (18% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (55%; 65 observations), (b) Direct/Perform (11%; 13 observations), (c) Ask/Answer (22%; 26 observations), and (d) Answer/Ask (9%; 10 observations). For combined semesters, within the Language Content of Academic Routine, 253 observations of Activity Structures were observed (17% within this area of Language Content). There were two noteworthy Activity Structures used predominately by

teachers. Those were: (a) Lecture/Listen (56%; 142 observations) and (b) Ask/Answer (14%; 35 observations).

During first semester, within the Language Content of Light Cognitive Content, 602 observations of Activity Structures were observed (72% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (15%; 89 observations), (b) Lecture/Perform (7%; 41 observations), (c) Direct/Perform (9%; 56 observations), (d) Lead/Perform (13%; 77 observations), (e) Ask/Answer (23%; 141 observations), and (f) Observe/Perform (17%; 103 observations). During second semester, within the Language Content of Light Cognitive Content, 412 observations of Activity Structures were observed (61% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (20%; 82 observations), (b) Direct/Perform (13%; 53 observations), (c) Lead/Perform (10%; 40 observations), (d) Ask/Answer (30%; 125 observations), and (e) Observe/Perform (15%; 60 observations). During combined semesters, within the Language Content of Light Cognitive Content, 1014 observations of Activity Structures were observed (67% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (17%; 171 observations), (b) Direct/Perform (11%; 109 observations), (c) Lead/Perform (12%; 117 observations), (d) Ask/Answer (26%; 266 observations), and (e) Observe/Perform (16%; 163 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 76 (9%) observations of Activity Structures. The most noteworthy were in six

Activity Structures: (a) Lecture/Listen (11%; 8 observations), (b) Direct/Perform (13%; 10 observations), (c) Demonstrate/Listen (15%; 11 observations), (d) Lead/Perform (9%; 7 observations), (e) Ask/Answer (17%; 13 observations), and (f) Evaluate/Perform (36%; 27 observations). For second semester, within the Language Content of Dense Cognitive Content, there were 143 (21%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lead/Perform (25%; 36 observations), (b) Ask/Answer (39%; 55 observations), (c) Evaluate/Perform (11%; 15 observations), and (d) Observe/Perform (9%; 13 observations). Combined semesters, within the Language Content of Dense Cognitive Content, there were 219 (15%) observations of Activity Structures. The most noteworthy were in seven Activity Structures: (a) Lecture/Listen (8%; 20 observations), (b) Direct/Perform (7%; 15 observations), (c) Demonstrate/Listen (7%; 16 observations), (d) Lead/Perform (20%; 43 observations), (e) Ask/Answer (31%; 68 observations), (f) Evaluate/Perform (7%; 15 observations), and (g) Observe/Perform (18%; 40 observations).

Second Grade. The total number of observations for first semester in second grade was 703 in Activity Structures, while second semester observations totaled 777 with a combined total of 1480 observations in Activity Structures within Language Content.

First semester, within the Language Content of Social Routines, only five observations in Activity Structures were observed, and for the second semester, only four were observed. For combined semesters, only nine observations were noted in the area of Social Routines.

First semester, within the Language Content of Academic Routine, 72 observations of Activity Structures were observed, (10% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (49%; 35 observations), (b) Direct/Listen (10%; 7 observations), (c) Direct/Perform (8%; 6 observations); (d) Demonstrate/Listen (8%; 6 observations), and (e) Ask/Answer (14%; 10 observations).

Second semester, within the Language Content of Academic Routine, 82 observations of Activity Structures were observed, (11% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (52%; 43 observations), (b) Direct/Perform (15%; 12 observations), and (c) Ask/Answer (28%; 23 observations). For combined semesters, within the Language Content of Academic Routine, 154 observations of Activity Structures were observed, (10% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (51%; 78 observations), (b) Direct/Perform (12%; 18 observations), and (c) Ask/Answer (21%; 33 observations).

First semester, within the Language Content of Light Cognitive Content 452 observations of Activity Structures were observed (64% within this area of Language Content). There were seven noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (14%; 63 observations), (b) Direct/Perform (8%; 35 observations), (c) Demonstrate/Listen (8%; 34 observations), (d) Lead/Perform

(8%; 36 observations), (e) Ask/Answer (32%; 141 observations), (f) Observe/Perform (16%; 74 observations), and (g) Observe/Cooperate (9%; 40 observations).

Second semester, within the Language Content of Light Cognitive Content 532 observations of Activity Structures were observed (69% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (19%; 99 observations), (b) Direct/Perform (13%; 70 observations), (c) Ask/Answer (24%; 129 observations), and (d) Observe/Perform (27%; 144 observations). For combined semesters, within the Language Content of Light Cognitive Content, 984 observations of Activity Structures were observed (67% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (17%; 162 observations), (b) Direct/Perform (11%; 105 observations), (c) Ask/Answer (27%; 270 observations), and (d) Observe/Perform (22%; 218 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 174 (25%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Demonstrate/Listen (12%; 20 observations), (b) Lead/Perform (16%; 27 observations), (c) Ask/Answer (38%; 66 observations), and (d) Evaluate/Perform (13%; 23 observations).

During second semester, within the Language Content of Dense Cognitive Content, there were 159 (21%) observations of Activity Structures. The most noteworthy were in two Activity Structures: (a) Demonstrate/Listen (13%; 21 observations), and (b) Ask/Answer (61%; 97 observations). During combined semesters, within the Language

Content of Dense Cognitive Content, there were 303 (23%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Demonstrate/Listen (12%; 41 observations), (b) Lead/Perform (11%; 37 observations), (c) Ask/Answer (49%; 163 observations), and (d) Observe/Perform (7%; 23 observations).

Third Grade. The total number of observations for first semester in second grade was 500 in Activity Structures; second semester yielded observations in Activity Structures at 563, and a combined total of 1063.

In the Language Content of Social Routines only one observation in Activity Structures was observed; there were no observations for second semester. Within the Language Content of Academic Routine, 35 observations of Activity Structures were observed (7% within this area of Language Content) during first semester. There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (83%; 29 observations), and (b) Answer/Ask (9%; 3 observations). Within the Language Content of Academic Routine, 42 observations of Activity Structures were observed (8% within this area of Language Content) during second semester. There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (43%; 18 observations), (b) Ask/Answer (31%; 13 observations), (c) Answer/Ask (12%; 5 observations). For combined semesters, within the Language Content of Academic Routine, 77 observations of Activity Structures were observed (7% within this area of Language Content) during second semester. There were three noteworthy Activity Structures used predominately by teachers. Those were: (a)

Lecture/Listen (61%; 47 observations), (b) Ask/Answer (18%; 14 observations), and (c) Answer/Ask (10%; 8 observations).

During first semester, within the Language Content of Light Cognitive Content, 376 observations of Activity Structures were observed (75% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (19%; 73 observations), (b) Direct/Perform (17%; 62 observations), (c) Ask/Answer (21%; 79 observations), and (d) Observe/Perform (28%; 104 observations). During second semester, within the Language Content of Light Cognitive Content, 320 observations of Activity Structures were observed (57% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (43%; 18 observations), (b) Ask/Answer (21%; 66 observations), and (c) Observe/Perform (24%; 78 observations). During combined semesters, within the Language Content of Light Cognitive Content, 696 observations of Activity Structures were observed (66% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 149 observations), (b) Direct/Perform (17%; 117 observations), (c) Ask/Answer (21%; 145 observations), and (d) Observe/Perform (26%; 182 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 88 (18%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Direct/Perform (15%; 13 observations), (b) Ask/Answer (47%; 41 observations), and (c) Evaluate/Perform (31%; 27 observations). Second semester, within



the Language Content of Dense Cognitive Content, there were 201 (36%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Direct/Perform (15%; 31 observations), (b) Demonstrate/Listen (7%; 13 observations), (c) Ask/Answer (31%; 62 observations), (d) Evaluate/Perform (10%; 21 observations), and (e) Observe/Perform (18%; 37 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 289 (27%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Direct/Perform (15%; 44 observations), (b) Ask/Answer (36%; 103 observations), (c) Evaluate/Perform (17%; 48 observations), and (d) Observe/Perform (13%; 37 observations).

Fourth Grade. The total number of observations for first semester in fourth grade was 471 in Activity Structures, and for second semester there were 210 observations in Activity Structures. For the combined semesters there were a total of 681 observations.

In the Language Content of Social Routines, no Activity Structures were observed for first and second semesters. During first semester within the Language Content of Academic Routine 33 observations of Activity Structures were observed (17% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (64%; 21 observations), (b) Ask/Answer (18%; 6 observations), and (c) Evaluate/Perform (9%; 3 observations). During second semester within the Language Content of Academic Routine there were only nine observations of Activity Structures were observed (4% within this area of Language Content). For combined semesters, within the Language Content of Academic

Routine, 42 observations of Activity Structures were observed (6% within this area of Language Content). There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 24 observations) and (b) Ask/Answer (29%; 12 observations).

First semester, within the Language Content of Light Cognitive Content, 232 observations of Activity Structures were observed (49% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (24%; 56 observations), (b) Ask/Answer (19%; 44 observations), (c) Observe/Perform (19%; 44 observations, and (d) Observe/Discuss (11%; 25 observations). Second semester, within the Language Content of Light Cognitive Content, 133 observations of Activity Structures were observed (63% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 32 observations), (b) Demonstrate/Listen (14%; 18 observations); (c) Ask/Answer (27%; 36 observations), and (d) Observe/Perform (34%; 45 observations). For combined semesters, within the Language Content of Light Cognitive Content, 365 observations of Activity Structures were observed (54% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (24%; 88 observations), (b) Ask/Answer (22%; 80 observations), and (c) Observe/Perform (24%; 89 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 205 (44%) observations of Activity Structures. The most noteworthy were in

three Activity Structures: (a) Direct/Perform (15%; 30 observations), (b) Ask/Answer (40%; 82 observations), (c) Observe/Perform (30%; 61 observations). During second semester, within the Language Content of Dense Cognitive Content, there were 67 (32%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Lecture/Listen (15%; 10 observations), (b) Ask/Answer (31%; 21 observations), and (c) Observe/Perform (36%; 24 observations). During combined semesters, within the Language Content of Dense Cognitive Content, there were 272 (40%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Demonstrate/Listen (13%; 35 observations), (b) Ask/Answer (38%; 103 observations), and (c) Observe/Perform (33%; 85 observations).

#### Content Reading Areas, Science and Social Studies, by Grade Level

First semester of content reading curriculum areas of science/social studies, there were a total of 2,539 observations, second semester 2,917, and combined semesters, 5,456.

Pre-Kindergarten-Kindergarten. There were a total of 30 observations during first semester. There were no observations second semester. Within the Language Content of Social Routines and Dense Cognitive Content, there were no observations of activity.

First semesters, within the Language Content of Academic Routine, there were only two observations. However, within the Language Content of Light Cognitive Content, there were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Direct/Perform (43%; 12 observations) and (b) Observe/Perform (54%; 15 observations).

Pre-Kindergarten. The total number of observations in Pre-Kindergarten was 297 in Activity Structures for first semester, 327 for second semester, and 624 for combined semesters.

For first and second semesters, no Social Routines were observed. For first semester, within the Language Content of Academic Routine, only 13 observations of Activity Structures were observed or 4% within this area of Language Content, while second semester there were seven observations (2% of the total Language Content). Combined semesters yielded a total of 20 (3%) observations. The predominate Activity Structures were: (a) Lecture/Listen (45%; 9 observations), (b) Demonstrate/Listen (10%; 2 observations), and (c) Ask/Answer (40%; 8 observations).

For first semester within the Language Content of Light Cognitive Content (284; 96% observations of Activity Structures), there were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (16%; 45 observations), (b) Direct/Perform (11%; 32 observations), (c) Demonstrate/Listen (9%; 25 observations), (d) Lead/Perform (8%; 22 observations), (e) Ask/Answer (20%; 56 observations), and (f) Observe/Perform (26%; 74 observations). For second semester (265, 81%) within the Language Content area of Light Cognitive Content, there were five notable Activity Structures used predominately by teachers: (a) Lecture/Listen (28%; 71 observations), (b) Demonstrate/Listen (9%; 24 observations), (c) Lead/Perform (14%; 36 observations), (d) Ask/Answer (20%; 52 observations), and (e) Observe/Perform (17%; 46 observations). For combined semesters (549, 88%) within the Language Content area of Light Cognitive Content, there were six notable Activity Structures used

predominately by teachers: (a) Lecture/Listen (22%; 119 observations), (b) Direct/Perform (9%; 49 observations), (c) Demonstrate/Listen (9%; 49 observations), (d) Lead/Perform (11%; 58 observations), (e) Ask/Answer (20%; 108 observations), and (f) Observe/Perform (22%; 120 observations).

First semester, no observations in Activity Structures were observed under Dense Cognitive Content. Second semester, there were 55 observations (17%). The most relevant were: (a) Lead/Perform (18%; 10 observations), (b) Ask/Answer (62%; 34 observations), and (c) Observe/Perform (15%; 8 observations). For combined semesters, there were 55 observations (9%). The most relevant were: (a) Lead/Perform (18%; 10 observations), (b) Ask/Answer (62%; 34 observations), and (c) Observe/Perform (15%; 8 observations).

Kindergarten. The total number of observations for first semester in Kindergarten was 586 in Activity Structures, while second semester there were 641, and 1227 for combined semesters.

First semester, in the Language Content of Social Routines, only six observations in Activity Structures were observed. Second semester, only eight Social Routines and Activity Structures were observed. Combined semesters yielded 14 observations (1%), with Activity Structures represented by Lead/Perform (3 observations), Evaluation/Discuss (3 observations), and Free Time (4 observations).

First semester, within the Language Content of Academic Routine, 41 observations of Activity Structures were observed (7% within this area of Language Content). There were two noteworthy Activity Structures used predominately by

teachers. Those were: (a) Lecture/Listen (54%; 22 observations) and (b) Direct/Listen (32%; 13 observations). Second semester, within the Language Content of Academic Routine, 112 observations of Activity Structures were observed (18% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 64 observations), (b) Direct/Perform (18%; 20 observations), and (c) Ask/Answer (20%; 22 observations). For combined semesters, within the Language Content of Academic Routine, 153 observations of Activity Structures were observed (13% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (56%; 86 observations), (b) Direct/Listen (11%; 16 observations), (c) Direct/Perform (13%; 20 observations), and (d) Ask/Answer (15%; 23 observations).

First semester, within the Language Content of Light Cognitive Content, 488 observations of Activity Structures were observed (83% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (12%; 59 observations), (b) Lead/Perform (23%; 110 observations), (c) Ask/Answer (26%; 129 observations), and (d) Observe/Perform (18%; 89 observations).

Second semester, within the Language Content of Light Cognitive Content, 457 observations of Activity Structures were observed (71% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 98 observations), (b) Direct/Perform

(11%; 52 observations), (c) Demonstrate/Listen (13%; 61 observations), (d) Lead/Perform (14%; 64 observations), and (e) Ask/Answer (26%; 117 observations).

For combined semesters, within the Language Content of Light Cognitive Content, 945 observations of Activity Structures were observed (77% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (17%; 157 observations), (b) Direct/Perform (8%; 78 observations), (c) Demonstrate/Listen (9%; 83 observations), (d) Lead/Perform (18%; 174 observations), (e) Ask/Answer (26%; 246 observations), and (f) Observe/Perform (13%; 121 observations).

For first semester within the Language Content of Dense Cognitive Content, there were only 51 (8%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (14%; 7 observations), (b) Direct/Perform (14%; 7 observations), (c) Demonstrate/Listen (22%; 11 observations), and (d) Ask/Answer (39%; 20 observations). For second semester, within the Language Content of Dense Cognitive Content, there were only 64 (10%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Direct/Perform (8%; 5 observations), (b) Lead/Perform (25%; 16 observations), and (c) Ask/Answer (64%; 41 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 115 (9%) observations of Activity Structures for first semester. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (8%; 9 observations), (b) Direct/Perform (10%; 12 observations), (c) Demonstrate/Listen

(10%; 11 observations), (d) Lead/Perform (16%; 18 observations), and (e) Ask/Answer (53%; 61 observations).

First Grade. The total number of observations for first semester in first grade was 589 in Activity Structures; for second semester in first grade there were 666 observations in Activity Structures and 1255 for the combined semesters.

For first semester, in the Language Content of Social Routines only four observations in Activity Structures were observed; for second semester, there were only ten observations. For combined semesters, there were 14 (1%) observations in Activity Structures.

For first semester, within the Language Content of Academic Routine, 50 observations of Activity Structures were observed (9% within this area of Language Content). There was one noteworthy Activity Structure used predominately by teachers: Lecture/Listen (72%; 36 observations). For second semester, within the Language Content of Academic Routine, 100 observations of Activity Structures were observed (15% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 57 observations), (b) Direct/Perform (13%; 13 observations), and (c) Ask/Answer (29%; 29 observations). For combined semesters, within the Language Content of Academic Routine, 150 observations of Activity Structures were observed (12% within this area of Language Content). There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (62%; 93 observations) and (b) Ask/Answer (21%; 31 observations).



During first semester, within the Language Content of Light Cognitive Content, 389 observations of Activity Structures were observed (66% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (14%; 15 observations), (b) Demonstrate/Listen (16%; 61 observations), (c) Lead/Perform (8%; 29 observations), (d) Ask/Answer (34%; 132 observations), and (e) Observe/Perform (9%; 35 observations). During second semester, within the Language Content of Light Cognitive Content, 423 observations of Activity Structures were observed (64% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (30%; 125 observations), (b) Direct/Perform (10%; 40 observations), (c) Ask/Answer (21%; 89 observations), (d) Evaluate/Perform (9%; 39 observations), and (e) Observe/Perform (15%; 62 observations). During combined semesters, within the Language Content of Light Cognitive Content, 812 observations of Activity Structures were observed (65% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (22%; 180 observations), (b) Demonstrate/Listen (10%; 77 observations), (c) Lead/Perform (7%; 53 observations), (d) Ask/Answer (27%; 221 observations), (e) Evaluate/Perform (7%; 56 observations), and (f) Observe/Perform (12%; 97 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 51 (8%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (14%; 7 observations), (b) Direct/Perform (14%; 7

observations), (c) Demonstrate/Listen (22%; 11 observations), and (d) Ask/Answer (39%; 20 observations). Second semester, within the Language Content of Dense Cognitive Content, there were 133 (20%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Lecture/Listen (18%; 24 observations), (b) Direct/Perform (17%; 23 observations), and (c) Ask/Answer (50%; 67 observations). Combined semesters, within the Language Content of Dense Cognitive Content, there were 279 (22%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (18%; 50 observations), (b) Direct/Perform (14%; 40 observations), (c) Demonstrate/Listen (10%; 28 observations), (d) Ask/Answer (40%; 112 observations), and (e) Observe/Perform (11%; 31 observations).

Second Grade. The total number of observations for first semester in second grade was 625 in Activity Structures, while second semester observations totaled 630 with a combined total of 1254 observations in Activity Structures within Language Content.

First semester, in the Language Content of Social Routines, only 23 (4%) observations in Activity Structures were observed with the majority of the observations in Observation/Perform (65%; 15 observations). For second semester, only one Activity Structure was observed. For combined semesters, only 24 observations were noted in the area of Social Routines, thus mirroring the first semester.

First semester, within the Language Content of Academic Routine, 76 observations of Activity Structures were observed (12% within this area of Language Content). There were three noteworthy Activity Structures used predominately by

teachers. Those were: (a) Lecture/Listen (67%; 51 observations), (b) Demonstrate/Listen (11%; 8 observations), and (c) Answer/Ask (8%; 6 observations).

Second semester, within the Language Content of Academic Routine, 36 observations of Activity Structures were observed (6% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (47%; 17 observations), (b) Direct/Perform (17%; 6 observations), and (c) Ask/Answer (28%; 10 observations). For combined semesters, within the Language Content of Academic Routine, 112 observations of Activity Structures were observed (9% within this area of Language Content). There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (61%; 68 observations) and (b) Ask/Answer (13%; 14 observations).

First semester, within the Language Content of Light Cognitive Content, 397 observations of Activity Structures were observed (64% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (22%; 87 observations), (b) Direct/Perform (10%; 41 observations), (c) Demonstrate/Listen (11%; 43 observations), (d) Ask/Answer (24%; 94 observations), and (e) Observe/Perform (25%; 101 observations).

Second semester, within the Language Content of Light Cognitive Content, 451 observations of Activity Structures were observed (72% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 96 observations), (b) Direct/Perform (9%; 41 observations), (c) Demonstrate/Listen (10%; 45 observations), (d) Ask/Answer

(26%; 119 observations), and (e) Observe/Perform (10%; 45 observations). For combined semesters, within the Language Content of Light Cognitive Content, 848 observations of Activity Structures were observed (68% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (22%; 183 observations), (b) Direct/Perform (10%; 82 observations), (c) Demonstrate/Listen (10%; 88 observations), (d) Ask/Answer (25%; 213 observations), and (e) Observe/Perform (17%; 146 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 129 (21%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Demonstrate/Listen (9%; 12 observations), (b) Ask/Answer (52%; 67 observations), and (c) Observe/Perform (19%; 24 observations).

During second semester, within the Language Content of Dense Cognitive Content, there were 142 (23%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (10%; 14 observations), (b) Ask/Answer (59%; 83 observations), (c) Evaluate/Perform (10%; 14 observations), (d) Observe/Perform (16%; 22 observations). During combined semesters, within the Language Content of Dense Cognitive Content, there were 271 (22%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Lecture/Listen (7%; 19 observations), (b) Ask/Answer (55%; 150 observations), and (c) Observe/Perform (17%; 46 observations).

Third Grade. The total number of observations for first semester in Third grade is 263 in Activity Structures; second semester yielded observations in Activity Structures at 443, and a combined total of 706.

In the Language Content of Social Routines only nine observations in Activity Structures were observed. There was only one observation for second semester. For combined semesters, only 10 observations were counted for Social Routines with the majority being in Observe/Perform (5 observations) and Ask/Answer (4 observations). Within the Language Content of Academic Routine, 19 observations of Activity Structures were observed (7% within this area of Language Content) during first semester. There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (74%; 15 observations) and (b) Answer/Ask (26%; 5 observations). Within the Language Content of Academic Routine, 36 observations of Activity Structures were observed (8% within this area of Language Content) during second semester. There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (64%; 23 observations) and (b) Ask/Answer (28%; 10 observations). For combined semesters, within the Language Content of Academic Routine, 55 observations of Activity Structures were observed (8% within this area of Language Content) during second semester. There were two noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (67%; 37 observations) and (b) Ask/Answer (27%; 15 observations).

During first semester, within the Language Content of Light Cognitive Content, 163 observations of Activity Structures were observed (62% within this area of Language

Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (11%; 18 observations), (b) Direct/Perform (13%; 21 observations), (c) Demonstrate/Listen (8%; 13 observations), (d) Ask/Answer (36%; 59 observations), and (e) Observe/Perform (17%; 27 observations). During second semester, within the Language Content of Light Cognitive Content, 280 observations of Activity Structures were observed (63% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (30%; 84 observations), (b) Direct/Perform (9%; 25 observations), (c) Demonstrate/Listen (8%; 22 observations), (d) Lead/Perform (10%; 27 observations), (e) Ask/Answer (32%; 89 observations), and (f) Observe/Perform (6%; 17 observations). During combined semesters, within the Language Content of Light Cognitive Content, 443 observations of Activity Structures were observed (63% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (23%; 102 observations), (b) Direct/Perform (10%; 46 observations), (c) Demonstrate/Listen (8%; 35 observations), (d) Lead/Perform (6%; 27 observations), (e) Ask/Answer (33%; 148 observations), and (f) Observe/Perform (10%; 48 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 72 (27%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Demonstrate/Listen (14%; 10 observations), (b) Ask/Answer (56%; 40 observations), (c) Evaluate/Perform (7%; 5 observations), and (d) Observe/Perform (10%; 7 observations). Second semester, within the Language Content

of Dense Cognitive Content, there were 126 (28%) observations of Activity Structures. The most noteworthy were in six Activity Structures: (a) Lecture/Listen (14%; 17 observations), (b) Direct/Perform (23%; 29 observations), (c) Demonstrate/Listen (8%; 11 observations), (d) Lead/Perform (12%; 15 observations), (e) Ask/Answer (33%; 41 observations), and (f) Observe/Perform (10%; 15 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 198 (28%) observations of Activity Structures. The most noteworthy were in six Activity Structures: (a) Lecture/Listen (11%; 21 observations), (b) Direct/Perform (15%; 29 observations), (c) Demonstrate/Listen (11%; 21 observations), (d) Lead/Perform (8%; 15 observations), (e) Ask/Answer (41%; 81 observations), and (f) Observe/Perform (10%; 20 observations).

Fourth Grade. The total number of observations for first semester in fourth grade was 149 in Activity Structures, and for second semester there were 210 observations in Activity Structures. For the combined semesters there was a total of 359 observations.

In the Language Content of Social Routines, no Activity Structures were observed for first and second semesters. During first semester, within the Language Content of Academic Routine, only four observations of Activity Structures were observed (3% within this area of Language Content). During second semester, within the Language Content of Academic Routine, there were only 12 observations of Activity Structures were observed (6% within this area of Language Content) with the majority of observations in Lecture/Listen (92%; 11 observations). For combined semesters within the Language Content of Academic Routine, 16 observations of Activity Structures were observed (5% within this area of Language Content).

First semester, within the Language Content of Light Cognitive Content, 81 observations of Activity Structures were observed (54% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 17 observations), (b) Direct/Perform (10%; 8 observations), (c) Lead/Perform (19%; 15 observations), (d) Ask/Answer (38%; 31 observations), and (e) Observe/Perform (10%; 8 observations). Second semester, within the Language Content of Light Cognitive Content, 130 observations of Activity Structures were observed (62% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (15%; 20 observations), (b) Direct/Perform (25%; 32 observations), (c) Demonstrate/Listen (32%; 41 observations), (d) Ask/Answer (6%; 8 observations), and (e) Observe/Perform (15%; 20 observations). For combined semesters, within the Language Content of Light Cognitive Content, 211 observations of Activity Structures were observed (59% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (18%; 37 observations), (b) Direct/Perform (19%; 40 observations), (c) Demonstrate/Listen (19%; 41 observations), (d) Lead/Perform (7%; 15 observations), (e) Ask/Answer (19%; 39 observations), and (f) Observe/Perform (13%; 28 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 64 (43%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (11%; 7 observations), (b) Demonstrate/Listen (6%; 4 observations), (c) Ask/Answer (34%; 22 observations), (d) Evaluate/Perform



(13%; 8 observations), and (e) Observe/Perform (33%; 21 observations). During second semester, within the Language Content of Dense Cognitive Content, there were 68 (32%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (9%; 6 observations), (b) Direct/Perform (18%; 12 observations), (c) Demonstrate/Listen (18%; 12 observations); and (d) Ask/Answer (53%; 36 observations). During combined semesters, within the Language Content of Dense Cognitive Content, there were 132 (37%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (10%; 13 observations), (b) Direct/Perform (11%; 14 observations), (c) Demonstrate/Listen (12%; 16 observations), (d) Ask/Answer (44%; 58 observations), and (e) Observe/Perform (13%; 28 observations).

#### Mathematics by Grade Level

First semester of mathematics curriculum, there were a total of 2,980 observations in Language Content and Activity Structures. Second semester had 3,000 and combined semesters had 5,980.

Pre-Kindergarten-Kindergarten. There were no observations during the first semester in mathematics. During the second semester there was a total of 30 observations. Within the Language Content of Social Routines, Academic Routines, and Dense Cognitive Content, there were no observations of activity.

Second semester, within the Language Content of Light Cognitive Content, there were three noteworthy Activity Structures used predominately by teachers. Those were:

(a) Lecture/Listen (30%; 9 observations), (b) Direct/Perform (37%; 11 observations) and (c) Demonstrate/Listen (27%; 8 observations).

Pre-Kindergarten. The total number of observations in Pre-Kindergarten was 328 in Activity Structures for first semester, 355 for second semester, and 683 for combined semesters.

For first semester no Social Routines were observed; second semester 11 observations were taken in Social Routines with the majority being in Observe/Perform (82%; 9 observations). During first semester within the Language Content of Academic Routine, only 23 observations of Activity Structures were observed or 7% within this area of Language Content, while in second semester there were 2 observations (.6% of the total Language Content). Combined semesters yielded a total of 25 (4%) observations. The predominate Activity Structures were: (a) Lecture/Listen (48%; 11 observations), (b) Direct/Perform (13%; 3 observations), and (c) Ask/Answer (39%; 9 observations).

For first semester, within the Language Content of Light Cognitive Content (261; 80% observations of Activity Structures), there were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (14%; 36 observations), (b) Direct/Perform (10%; 26 observations), (c) Demonstrate/Listen (13%; 35 observations), (d) Ask/Answer (39%; 101 observations), and (e) Observe/Perform (10%; 27 observations). For second semester, within the Language Content area of Light Cognitive Content (337, 95%), there were six notable Activity Structures used predominately by teachers: (a) Lecture/Listen (17%; 58 observations), (b) Direct/Perform

(12%; 41 observations), (c) Demonstrate/Listen (13%; 45 observations), (d) Lead/Perform (12%; 39 observations), (e) Ask/Answer (21%; 70 observations), and (f) Observe/Perform (14%; 48 observations). For combined semesters, within the Language Content area of Light Cognitive Content (598, 88%), there were six notable Activity Structures used predominately by teachers: (a) Lecture/Listen (16%; 94 observations), (b) Direct/Perform (11%; 67 observations), (c) Demonstrate/Listen (13%; 80 observations), (d) Lead/Perform (9%; 53 observations), (e) Ask/Answer (29%; 171 observations), and (f) Observe/Perform (13%; 75 observations).

First semester, 44 (15%) observations in Activity Structures were observed under Dense Cognitive Content. The most relevant were: (a) Direct/Perform (18%; 8 observations), (b) Demonstrate/Listen (32%; 14 observations), and (c) Ask/Answer (39%; 17 observations). Second semester, there were only five observations (1%). Those five were predominately observed in Lecture/Listen (40%; 2 observations) and Ask/Answer (60%, 3 observations). For combined semesters, there were 49 observations (7%). The most relevant were: (a) Direct/Perform (16%; 8 observations), (b) Demonstrate/Listen (29%; 14 observations), and (c) Ask/Answer (41%; 20 observations).

Kindergarten. The total number of observations for first semester in Kindergarten was 656 in Activity Structures, while second semester there were 562, and 1218 for combined semesters.

First semester, in the Language Content of Social Routines, only six (.9%) observations in Activity Structures were observed. Second semester, only six (1%) Social Routines and Activity Structures were observed. Combined semesters yielded 12

observations (1%) with Activity Structures represented mainly by (a) Direct/Perform (17%; 2 observations), (b) Ask/Answer (17%; 2 observations), and (c) Non-academic Free time (33%; 4 observations)

First semester, within the Language Content of Academic Routine, 85 observations of Activity Structures were observed (13% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 48 observations), (b) Direct/Perform (20%; 17 observations), and (c) Demonstrate/Listen (13%; 11 observations). Second semester, within the Language Content of Academic Routine, 60 observations of Activity Structures were observed (11% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (35%; 21 observations), (b) Direct/Listen (13%; 8 observations), (c) Direct/Perform (10%; 6 observations), (d) Demonstrate/Listen (8%; 5 observations), (e) Evaluate/Perform (8%; 5 observations), (f) Observe/Perform (13%; 8 observations). For combined semesters, within the Language Content of Academic Routine, 145 observations of Activity Structures were observed (12% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (48%; 69 observations), (b) Direct/Perform (16%; 23 observations), and (c) Demonstrate/Listen (11%; 16 observations).

First semester, within the Language Content of Light Cognitive Content, 501 observations of Activity Structures were observed (76% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers.

Those were: (a) Lecture/Listen (18%; 91 observations), (b) Direct/Perform (12%; 60 observations), (c) Demonstrate/Listen (9%; 45 observations), (d) Lead/Perform (9%; 45 observations), (e) Ask/Answer (32%; 162 observations), and (f) Observe/Perform (11%; 54 observations).

Second semester, within the Language Content of Light Cognitive Content, 431 observations of Activity Structures were observed (77% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (9%; 40 observations), (b) Direct/Perform (12%; 50 observations), (c) Demonstrate/Listen (8%; 36 observations), (d) Lead/Perform (19%; 81 observations), (e) Ask/Answer (24%; 118 observations), and (f) Observe/Perform (15%; 63 observations).

For combined semesters, within the Language Content of Light Cognitive Content, 932 observations of Activity Structures were observed (77% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (14%; 131 observations), (b) Direct/Perform (12%; 110 observations), (c) Demonstrate/Listen (9%; 81 observations), (d) Lead/Perform (14%; 126 observations), (e) Ask/Answer (30%; 280 observations), and (f) Observe/Perform (13%; 117 observations).

Within the Language Content of Dense Cognitive Content, there were only 64 (10%) observations of Activity Structures for first semester. The most noteworthy were in four Activity Structures: (a) Direct/Perform (14%; 9 observations), (b) Ask/Answer (28%; 18 observations), (c) Evaluate/Perform (13%; 8 observations), and (d)

Observe/Perform (30%; 19 observations). For second semester, within the Language Content of Dense Cognitive Content, there were only 65 (12%) observations of Activity Structures for first semester. The most noteworthy were in four Activity Structures: (a) Direct/Perform (11%; 7 observations), (b) Ask/Answer (40%; 24 observations), (c) Evaluate/Perform (14%; 9 observations), and (d) Observe/Perform (15%; 10 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 129 (11%) observations of Activity Structures for first semester. The most noteworthy were in six Activity Structures: (a) Direct/Perform (12%; 16 observations), (b) Demonstrate/Listen (8%; 10 observations), (c) Lead/Perform (8%; 10 observations), (d) Ask/Answer (33%; 42 observations), (e) Evaluate/Perform (13%; 17 observations), and (f) Observe/Perform (22%; 29 observations).

First Grade. The total number of observations for first semester in first grade was 685 in Activity Structures; for second semester in first grade there were 700 observations in Activity Structures and 1385 for the combined semesters.

For first semester, in the Language Content of Social Routines, 17 (3%) observations in Activity Structures were observed primarily in Observe/Perform (29%; 5 observations) and Non-Academic Free Time (59%; 10 observations); for second semester, there were 37 (5%) observations. The main observations were in (a) Lecture/Listen (11%; 4 observations), (b) Direct/Perform (19%; 7 observations), and (c) Observe/Cooperate (30%; 11 observations). For combined semesters, there were 54 (4%) observations in Activity Structures. Those were in (a) Direct/Perform (13%; 7

observations), (b) Observe/Perform (30%; 16 observations), (c) Observe/Cooperate (20%; 11 observations), (d) Non-Academic Free Time (19%; 10 observations).

For first semester, within the Language Content of Academic Routine, 102 observations of Activity Structures were observed (15% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers: (a) Lecture/Listen (52%; 53 observations), (b) Direct/Perform (14%; 14 observations), and (c) Ask/Answer (27%; 27 observations). For second semester, within the Language Content of Academic Routine, 88 observations of Activity Structures were observed (13% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (63%; 55 observations), (b) Direct/Listen (15%; 13 observations), and (c) Ask/Answer (10%; 9 observations). For combined semesters, within the Language Content of Academic Routine, 190 observations of Activity Structures were observed (14% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (57%; 108 observations), (b) Direct/Listen (7%; 13 observations), (c) Direct/Perform (10%; 18 observations), and (d) Ask/Answer (19%; 36 observations).

During first semester, within the Language Content of Light Cognitive Content, 362 observations of Activity Structures were observed (53% within this area of Language Content). There were six noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (24%; 85 observations), (b) Direct/Perform (12%; 45 observations), (c) Demonstrate/Listen (11%; 41 observations), (d) Ask/Answer (25%; 92

observations), and (e) Observe/Perform (16%; 56 observations). During second semester, within the Language Content of Light Cognitive Content, 467 observations of Activity Structures were observed (67% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (21%; 98 observations), (b) Direct/Perform (9%; 40 observations), (c) Demonstrate/Listen (11%; 52 observations), (d) Ask/Answer (26%; 123 observations), (e) Observe/Perform (18%; 82 observations). During combined semesters, within the Language Content of Light Cognitive Content, 829 observations of Activity Structures were observed (60% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (22%; 183 observations), (b) Direct/Perform (10%; 85 observations), (c) Demonstrate/Listen (11%; 93 observations), (d) Ask/Answer (26%; 215 observations), and (e) Observe/Perform (17%; 138 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 204 (30%) observations of Activity Structures. The most noteworthy were in two Activity Structures: (a) Ask/Answer (53%; 108 observations), and (b) Observe/Perform (25%; 50 observations). Second semester, within the Language Content of Dense Cognitive Content, there were 107 (15%) observations of Activity Structures. The most noteworthy were in six Activity Structures: (a) Lecture/Listen (8%; 9 observations), (b) Direct/Perform (7%; 7 observations), (c) Demonstrate/Listen (7%; 7 observations), (d) Lead/Perform (10%; 13 observations), (e) Ask/Answer (52%; 56 observations), and (f) Observe/Perform (7%; 7 observations). Combined semesters, within the Language



Content of Dense Cognitive Content, there were 311 (22%) observations of Activity Structures. The most noteworthy were in six Activity Structures: (a) Lecture/Listen (7%; 21 observations), (b) Direct/Perform (6%; 17 observations), (c) Demonstrate/Listen (7%; 23 observations), (d) Lead/Perform (7%; 21 observations), (e) Ask/Answer (53%; 164 observations), and (f) Observe/Perform (18%; 57 observations).

Second Grade. The total number of observations for first semester in second grade was 712 in Activity Structures, while second semester observations totaled 679 with a combined total of 1391 observations in Activity Structures within Language Content.

First semester, in the Language Content of Social Routines, only 26 (4%) observations in Activity Structures were observed with the majority of the observations in (a) Lecture/Listen (23%; 6 observations), (b) Direct/Perform (19%; 5 observations), (c) Demonstrate/Listen (12%; 3 observations), and (d) Ask/Answer (42%; 11 observations). For second semester, no Social Routine was observed.

First semester, within the Language Content of Academic Routine, 67 observations of Activity Structures were observed (9% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (54%; 36 observations), (b) Direct/Perform (19%; 13 observations), and (c) Answer/Ask (21%; 14 observations).

Second semester, within the Language Content of Academic Routine, 71 observations of Activity Structures were observed (11% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (62%; 44 observations), (b) Lecture/Perform

(11%; 8 observations), (c) Direct/Listen (11%; 8 observations), and (d) Answer/Ask (9%; 6 observations). For combined semesters, within the Language Content of Academic Routine, 138 observations of Activity Structures were observed (10% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (58%; 80 observations), (b) Direct/Perform (10%; 14 observations), and (c) Ask/Answer (12%; 17 observations).

First semester, within the Language Content of Light Cognitive Content, 449 observations of Activity Structures were observed (63% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (23%; 105 observations), (b) Direct/Perform (11%; 49 observations), (c) Demonstrate/Listen (13%; 59 observations), (d) Ask/Answer (33%; 146 observations), and (e) Observe/Perform (7%; 33 observations).

Second semester, within the Language Content of Light Cognitive Content, 500 observations of Activity Structures were observed (74% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (13%; 63 observations), (b) Direct/Perform (12%; 60 observations), (c) Demonstrate/Listen (12%; 56 observations), (d) Ask/Answer (27%; 137 observations), and (e) Observe/Perform (23%; 113 observations). For combined semesters, within the Language Content of Light Cognitive Content 949 observations of Activity Structures were observed (68% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (17%; 168 observations), (b) Direct/Perform

(12%; 109 observations), (c) Demonstrate/Listen (12%; 115 observations), (d) Ask/Answer (30%; 283 observations), and (e) Observe/Perform (15%; 146 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 170 (24%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Direct/Perform (12%; 20 observations), (b) Demonstrate/Listen (14%; 24 observations), (c) Ask/Answer (54%; 92 observations), and (d) Observe/Perform (12%; 20 observations).

During second semester, within the Language Content of Dense Cognitive Content, there were 108 (16%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Demonstrate/Listen (12%; 13 observations), (b) Ask/Answer (43%; 46 observations), (c) Observe/Perform (32%; 34 observations).

During combined semesters, within the Language Content of Dense Cognitive Content, there were 278 (20%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Direct/Perform (8%; 22 observations), (b) Demonstrate/Listen (14%; 37 observations), (c) Ask/Answer (50%; 138 observations), and (d) Observe/Perform (19%; 54 observations).

Third Grade. The total number of observations for first semester in third grade was 389 in Activity Structures; second semester yielded observations in Activity Structures at 522, and a combined total of 911.

In the Language Content of Social Routines, there were no observations in Activity Structures for first or second semesters. Within the Language Content of Academic Routine, 15 observations of Activity Structures were observed (4% within this

area of Language Content) during first semester. There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (53%; 8 observations), (b) Direct/Perform (27%; 4 observations), and (c) Answer/Ask (20%; 3 observations). Within the Language Content of Academic Routine, 56 observations of Activity Structures were observed (11% within this area of Language Content) during second semester. There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (66%; 37 observations), (b) Demonstrate/Listen (7%; 4 observations), and (c) Ask/Answer (16%; 9 observations). For combined semesters, within the Language Content of Academic Routine, 71 observations of Activity Structures were observed (8% within this area of Language Content). There were three noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (63%; 45 observations), (b) Ask/Answer (13%; 9 observations), and (c) Answer/Ask (7%; 5 observations).

During first semester, within the Language Content of Light Cognitive Content, 212 observations of Activity Structures were observed (55% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (23%; 49 observations), (b) Direct/Perform (13%; 28 observations), (c) Demonstrate/Listen (10%; 21 observations, and (d) Ask/Answer (51%; 108 observations). During second semester, within the Language Content of Light Cognitive Content, 292 observations of Activity Structures were observed (56% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen

(11%; 31 observations), (b) Direct/Perform (9%; 26 observations), (c) Demonstrate/Listen (19%; 55 observations), (d) Ask/Answer (20%; 59 observations), and (e) Observe/Perform (22%; 65 observations). During combined semesters, within the Language Content of Light Cognitive Content, 504 observations of Activity Structures were observed (55% within this area of Language Content). There were five noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (16%; 80 observations), (b) Direct/Perform (11%; 54 observations), (c) Demonstrate/Listen (15%; 78 observations), (d) Ask/Answer (33%; 167 observations), and (e) Observe/Perform (13%; 66 observations).

First semester, within the Language Content of Dense Cognitive Content, there were 162 (42%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (12%; 19 observations), (b) Demonstrate/Listen (26%; 42 observations), (c) Ask/Answer (40%; 65 observations), and (d) Observe/Perform (16%; 26 observations). Second semester, within the Language Content of Dense Cognitive Content, there were 174 (33%) observations of Activity Structures. The most noteworthy were in six Activity Structures: (a) Lecture/Listen (10%; 18 observations), (b) Direct/Perform (7%; 12 observations), (c) Demonstrate/Listen (9%; 16 observations), (d) Ask/Answer (32%; 55 observations), (e) Evaluate/Perform (9%; 15 observations), and (f) Observe/Perform (24%; 42 observations). For combined semesters, within the Language Content of Dense Cognitive Content, there were 336 (37%) observations of Activity Structures. The most noteworthy were in four Activity Structures: (a) Lecture/Listen (11%; 37 observations), (b) Demonstrate/Listen (17%; 58

observations), (c) Ask/Answer (36%; 120 observations), and (d) Observe/Perform (20%; 68 observations).

Fourth Grade. The total number of observations, for first semester in fourth grade, was 210 in Activity Structures, and for second semester, there were 152 observations in Activity Structures. For the combined semesters, there were a total of 362 observations.

In the Language Content of Social Routines, no Activity Structures were observed for first semester, and only one observation for second semester. During first semester within the Language Content of Academic Routine six observations of Activity Structures were observed (3% within this area of Language Content). During second semester, within the Language Content of Academic Routine, there were only five observations of Activity Structures were observed (3% within this area of Language Content). For combined semesters, within the Language Content of Academic Routine, 11 observations of Activity Structures were observed (3% within this area of Language Content). Main distributions were: (a) Lecture/Listen (73%; 8 observations), and (b) Direct/Listen (18%; 2 observations).

First semester, within the Language Content of Light Cognitive Content, 115 observations of Activity Structures were observed (55% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (10%; 12 observations), (b) Direct/Perform (12%; 14 observations), (c) Ask/Answer (52%; 60 observations), and (d) Evaluate/Discuss (17%; 19 observations). Second semester, within the Language Content of Light Cognitive Content, 32 observations of Activity Structures were observed (21%

within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (38%; 12 observations), (b) Lecture/Perform (13%; 4 observations), (c) Ask/Answer (16%; 5 observations), and (d) Observe/Perform (6%; 2 observations). For combined semesters, within the Language Content of Light Cognitive Content, 147 observations of Activity Structures were observed (41% within this area of Language Content). There were four noteworthy Activity Structures used predominately by teachers. Those were: (a) Lecture/Listen (16%; 24 observations), (b) Direct/Perform (10%; 15 observations), (c) Ask/Answer (44%; 65 observations), and (d) Evaluate/Discuss (13%; 19 observations).

During first semester, within the Language Content of Dense Cognitive Content, there were 89 (42%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (7%; 6 observations), (b) Direct/Perform (14%; 12 observations), (c) Demonstrate/Listen (10%; 9 observations), (d) Ask/Answer (38%; 34 observations), and (e) Observe/Perform (30%; 27 observations). During second semester, within the Language Content of Dense Cognitive Content, there were 114 (75%) observations of Activity Structures. The most noteworthy were in three Activity Structures: (a) Lecture/Listen (9%; 10 observations), (b) Ask/Answer (37%; 42 observations), and (c) Observe/Perform (20%; 23 observations). During combined semesters, within the Language Content of Dense Cognitive Content, there were 203 (56%) observations of Activity Structures. The most noteworthy were in five Activity Structures: (a) Lecture/Listen (8%; 16 observations), (b) Direct/Perform (9%; 19

observations), (c) Demonstrate/Listen (7%; 14 observations), (d) Ask/Answer (38%; 76 observations), and (e) Observe/Perform (27%; 50 observations).

Research Question 5: Are teachers' perceptions of their language of instruction associated with classroom observations?

For this research question, the language of instruction of the teacher for clarification levels of Spanish introducing English (L1-2) and English clarified by Spanish (L2-1), and silent time (NA) were excluded from the TBP variable language of instruction– teacher because the teacher questionnaire did not address those three variables. It only requested information on perceived instructional time in the content areas of science and/or social studies in L1 or L2. The remaining levels, L1 and L2, which represented observed use of Spanish and English, corresponded to the two dependent variables; that is, the Teacher Questionnaire, Items 15 Spanish and 15 English (your estimated language time spent teaching science or social studies: Spanish\_\_\_\_ English\_\_\_\_). Thus, associations between the independent variables and the dependent variables would be meaningful, because the former represented researchers' observations of Spanish and English language use, and the latter represented teacher's self-perceptions of these same characteristics. Results were analyzed by calculating Pearson's  $r$  with proportions derived from the dichotomized variable. This parametric correlation coefficient could be used because the data showed little abnormality and because all variables used could be considered continuous.

For the first semester, Items 15 Spanish and 15 English produced identical results, because these items were perfectly associated. This occurred because each teacher in the



sample responded to the two items with corresponding proportions. For example, teachers who said they used Spanish 80% of the time conversely said they used English 20% of the time.

All correlations were small and statistically non-significant, except the correlation with item 15 English for second semester, which was slightly larger and statistically significant. With this exception, the results would be likely if the true population association were zero. In the sample, third grade teachers' observed language use had small associations with their self-perceived language use. For the combined semesters, teachers' perceptions of their own language of instruction usage were not significantly correlated with the observed teachers' language of instruction. Table I presents correlations with language of instruction-teacher.

Table I.

Correlations With Language of Instruction–Teacher

Item	$r^a$	p
First Semester <sup>b</sup>		
15 Spanish	-.118	.149
15 English	-.118	.149
Second Semester <sup>b</sup>		
15 Spanish	.086	.296
15 English	.222	.006
Combined Semesters <sup>b</sup>		
15 Spanish	-.038	.511
15 English	.056	.336

<sup>a</sup>Pearson's coefficient.

<sup>b</sup>After weighting, N = 151 for the first semester, 150 for the second semester, and 301 for combined semesters.

Additionally, Third grade was specifically reviewed because of the high stakes assessment at that level. Percent of language of instruction used at Third grade follows in the following table.

Table II.

Percent of Observed Frequencies of Language of Instruction at Third Grade

Grade Level	L1	L2	L1-L2	L2-L1	Silent
3	38%	45%	3%	3%	11%

L1 = Spanish (native language), L2 = English (target language), L1-2 = Spanish introducing English, L2-1 = English clarified by Spanish

Specific correlations at third grade are presented in Table III.

Table III.

Correlations With Language of Instruction–Teacher

Item	$r^a$	$p$
Combined Semester <sup>b</sup>		
14 Spanish	-.452	.001
14 English	.642	.000
Combined Semesters <sup>b</sup>		
15 Spanish	-.038	.511
15 English	.056	.336

<sup>a</sup>Pearson's coefficient.

<sup>b</sup>After weighting, Item 14: N= 49 for combined semesters; Item 15: N = 301 for combined semesters.

According to Cummins (1992), the variable language of instruction plays a critical role in the classroom behavior and achievement. If teachers are unaware of their

own use of language (native or target language), then opportunities to learn can be diminished for the students. Herein, it is evident that teachers were not as aware of the actual percent of time they incorporated one language over the other in the area of the content area reading subjects of science and social studies. For reading, however, they were more able to approximate their observed use of the language.

Following in Table IV are the percentages of third graders passing or failing TAAS.

Table IV.

Percent of Students at Third Grade Passing/Failing by Language of TAAS Reading Test

Grade Level	TAAS Test in Spanish		TAAS Test in English	
	Pass	Fail	Pass	Fail
3	85%	15%	75%	25%

Research Question 6: What are the associations between the four dimensions of TBP theory and elementary bilingual student achievement on the high-stakes assessment, TAAS?

According to the data, among the sample of 345 ELL students taking the TAAS reading test in Spanish or in English, 81% passed and 19% failed the TAAS, compared to 87% of all students taking the test passing, 83% Hispanic students passing, and 93% of White students passing in the entire state of Texas (Texas Education Agency, 2001). Additionally, according to the 2000 District Academic Excellence Indicator System

(2001), 87% of the students at grade 3 taking the TAAS reading in English passed, while 89% of the students taking the test in Spanish passed (in the district in which the study took place). A synthesis of the proportion of students taking the TAAS Reading Test, passing and failing by language follows: pass/fail rates in Spanish were 85% passed, 15% failed; in English, 75% passed, 25% failed (See Table 3).

Three specific analyses were conducted under this research question. All involved Chi Square and analyzed relationships between: (a) Language of Instruction and TAAS Reading Scores, (b) Language of the Test and TAAS Reading Scores, and (c) Language of Instruction by Language of Test and TAAS Reading Scores.

Language of Instruction by TAAS Reading Scores. Results of the Pearson's  $\chi^2$ , for combined semesters, indicated that language of instruction of the teacher and the TAAS reading test score were non-independent ( $\chi^2(4)=12.915$ ,  $p=.012$ ; Cramer's  $V=.193$ ). The strength of the relationship between the variables is moderate in strength and worth noting.

Language of the Test and TAAS Reading Scores. Results of the Pearson's  $\chi^2$  for combined semesters indicated that language of the test (the language in which the student took the test) and the TAAS Reading test score were non-independent. For example, the Chi Square analysis was calculated for Language of the Test and TAAS Reading scores, ( $\chi^2(1)=4.314$ ,  $p=.038$ ; Cramer's  $V=.112$ ). As indicated, the results were significantly dependent but the strength of the relationship was low moderate.

Language of Instruction by Language of Test and TAAS Reading Scores. When Chi Square was calculated using cross tabs with a layered design, (Language of

Instruction layered by Language of the Test), and the TAAS Reading scores, the results of the Pearson's  $\chi^2$  for combined semesters indicated that language of instruction by English (language of test) and the test score were non-independent ( $\chi^2(3)=10.717$ ,  $p=.013$ ; Cramer's  $V=.308$ ). According to these results, the relationship between the variables is considered moderately strong. The results of the Pearson's  $\chi^2$  for combined semesters indicated that language of instruction by Spanish (language of test) and the test score were non-independent ( $\chi^2(4)=38.044$ ,  $p=.000$ ; Cramer's  $V=.405$ ). According to these results, the relationship between the variables is considered strong.

As data indicated, associations existed for each dimension and the reading scores on the high-stakes assessment, TAAS, at third grade level. With a majority of bilingual students (66%) taking the TAAS in Spanish at the end of the third grade year, there would appear to be a natural relationship with native language instruction and student responses in the native language. The amount of language of instruction, as reported in research question one, does not equal the current expected percentage of language of instruction at third grade level which is 50% English and 50% Spanish. This is not encouraging as there is a lack of opportunity to learn in English in order that the student be ready to be mainstreamed to English-only classrooms beginning in Fourth grade. Even if students are able to fit into a fourth grade bilingual program, the language split should be 90% English and 10% Spanish. That is a phenomenal jump in language skills from one grade to the next. In all of the other years, English is increased only in increments of 10%. To meet the district goal of students receiving instruction in Spanish 50% of the time, and in English 50% of the time, (J. C. Harville, personal communication, July 12,

2000), and to better prepare students for taking the high-stakes TAAS test and for transitioning into mainstream classrooms, teachers need to increase their use of English as the language of instruction in reading and in the content areas of science and social studies. They must provide the opportunity to learn in the target language if they are to provide an avenue of success for the students to even be able to pass the high stakes test and to be out of the bilingual program. Opportunity to learn in the native or target language does have a dependent relationship according to these data with the high stakes assessment. It also has a relationship to the student's ability to exit bilingual education programs.

Based upon the observations, teachers and administrators may not have selected the correct language for the TAAS test to be given at third grade level for each student since there were 15% failure rates for the test being administered in Spanish and 25% failure rates for the test being administered in English. It is critical for teachers and administrators to be able to know actual time spent in use of language of instruction. Without sufficient time being given students or, in other words, without the opportunity to learn in the appropriate language of the test, then it stands to reason, students are not going to be successful. Teachers need to become aware of changes occurring in the frequency of English usage from first to second semester.

**FIELD-INITIATED RESEARCH REPORT**  
**August, 2001**

**SECTION IV**  
**RECOMMENDATIONS AND IMPLICATIONS FOR PRACTICE**

Based on the analysis of the data for this research study, the following implications for improved pedagogical practice apply:

- The district should reassess the transition periods by percentages for pedagogical language occurrences.
- The district should train supervisors in the TBP model and assessment of language of instruction so follow-through can occur.
- The district should train teachers in content area instruction and the relationship to language of instruction and language acquisition.
- The district should allow time for vertical planning between grade levels to ensure that the transitional program in language of instruction percentages are considered.
- Teachers should be trained in how to observe and be knowledgeable of their own percentages of time spent in the two languages of instruction.
- Teachers should be made aware of the critical connection between both languages of instruction and student achievement.
- The district needs to reexamine the expectation of the language of instruction of 50% Spanish, 50% English in third grade, as well as expectations at all grade levels.

- The district continually needs to examine the language of instruction in the classroom as it relates to the language in which student take the TAAS test.
- Teachers need to strive to increase their use of English as the language of instruction.
- If dual language programs are being implemented, an actual accounting of number of hours of use of instruction should be considered.



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